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THE DIMENSIONS OF COMPOSITION ANNOTATION.

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ENGLISH TEACHER ANNOTATIONS WERE STUDIED TO DETERMINE THE DIMENSIONS AND PROPERTIES OF THE ENTIRE SYSTEM FOR WRITING CORRECTIONS AND CRITICISMS ON COMPOSITIONS. FOUR SETS OF COMPOSITIONS WERE WRITTEN BY STUDENTS IN GRADES 9 THROUGH 13. TYPESCRIPTS OF THE COMPOSITIONS WERE ANNOTATED BY CLASSROOM ENGLISH TEACHERS. THEN, 32 ENGLISH TEACHERS JUDGED THE ANNOTATIONS OF 313 COMPOSITIONS ON 32 BIPOLAR ADJECTIVE SCALES. THE MATRIX OF THE INTERCORRELATIONS OF THESE RATINGS WAS ANALYZED. FINDINGS CONFIRMED THE HYPOTHESIS THAT THE FACTOR-STRUCTURE OF COMPOSITION ANNOTATION CORRESPONDS TO THAT OF COMPOSITIONS. INTERPRETATION OF FINDINGS INDICATED THAT ANNOTATION DOES POSSESS GENERAL INTERNAL PROPERTIES OR DIMENSIONS, WHICH IN THEIR ORDER OF IMPORTANCE ARE (1) A CONTENT-STYLE FACTOR, TERMED "COMPETENCE AND ADEQUACY," REFLECTING THE ATTRIBUTES OF SCOPE, DEPTH, AND PURPOSEFULNESS, (2) A TONE FACTOR, TERMED "HELPFULNESS AND POSITIVENESS," REFLECTING THE ATTRIBUTES OF FEELING AND ATTITUDE, (3) A PHYSICAL FACTOR, TERMED "APPEARANCE," REFLECTING ATTRIBUTES OF FORMAT AND VISUAL IMPACT, AND (4) A FITNESS FACTOR, TERMED "APPROPRIATENESS," THAT SEEMS TO REFLECT THE EXTENT OF APPROPRIATENESS THAT AN ANNOTATION SHOWS IN RELATION TO THE CONCEPT OF WHAT ANNOTATIONS SHOULD BE. (JM)

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THE DIMENSIONS OF COMPOSITION ANNOTATION

COOPERATIVE RESEARCH PROJECT S-216

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STATE UNIVERSITY OF NEW YORK
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THE DIMENSIONS OF COMPOSITION ANNOTATION

Cooperative Research Project S-216

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Project Director and Chief Investigator

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and
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PREFACE

This is a report of research conducted from the late summer of 1964 to the fall of 1965, primarily at the State University of New York College at Oswego but also, in some part, at both the Laboratory of Experimental Design in Education and the Computing Center of the University of Wisconsin in Madison.

The author thanks Professor Julian Stanley, Mr. Tom Houston and Mr. Alan Abrams of the Laboratory of Experimental Design, Mr. Robert Remstad of the University of Wisconsin at Milwaukee, and Mr. Theodore Lemcke of the College at Oswego, for their significant contribution during the course of the study, as well as Professor David Wiley of the University of Chicago for his valuable suggestions during its inception. The author thanks also the many staff members of the College and the Research Foundation and his many colleagues who helped to expedite the study.

Finally, the author acknowledges a special debt of gratitude to those college and high school English teachers who so generously provided the compositions and annotated the compositions that made the successful completion of the study possible.

TABLE OF CONTENTS

Preface		ii
List of Tables		iv
PART ONE:	THE PROBLEM UNDER FOCUS	1
PART TWO:	RELATED RESEARCH	4
PART THREE:	OBJECTIVES OF THE STUDY	7
PART FOUR:	PROCEDURES	8
PART FIVE:	ANALYSES OF THE DATA AND FINDINGS	27
PART SIX:	CONCLUSIONS AND IMPLICATIONS	32
PART SEVEN:	APPENDICES	
A.	Sample Sheet of the Judging Instrument	36
B.	Tables Not Included in the Text	37
C.	List of Judges	62
BIBLIOGRAPHY		63

LIST OF TABLES

1.	Carroll's General Dimensions of Composition	4
2.	Remondino's General Dimensions of Composition	5
3.	Design of Judging for First Day	16
4.	Design of Judging for Second Day	18
5.	Design of Judging for Third Day	20
6.	Design of Judging for Fourth Day	22
7.	Summary of the General and Specific Factors Extracted	29
8.	Intercorrelation Matrix	37
9.	Unrotated Factor Matrix, Factor Analysis	40
10.	Rotated Factor Matrix, Factor Analysis	42
11.	Unrotated Factor Matrix, Incomplete Components Analysis	44
12.	Rotated Factor Matrix, Incomplete Components Analysis	45
13.	Unrotated Factor Matrix, Image Analysis	46
14.	Rotated Factor Matrix, Image Analysis	49
15.	Analysis of Variance Summary	52
16.	Intercorrelation Matrix, Remondino Study	53
17.	Unrotated Factor Matrix, Factor Analysis, Remondino Study	55
18.	Rotated Factor Matrix, Factor Analysis, Remondino Study	56
19.	Unrotated Factor Matrix, Incomplete Components Analysis, Remondino Study	57
20.	Rotated Factor Matrix, Incomplete Components Analysis, Remondino Study	57

21. Unrotated Factor Matrix, Image Analysis, Remondino Study 58

22. Rotated Factor Matrix, Image Analysis, Remondino Study 59

23. Summary of the General and Specific Factors Extracted from Analyses of Published Correlation Matrix of Remondino Study 60

I. THE PROBLEM UNDER FOCUS

The term composition annotation can be defined as the responses that an English teacher writes on student compositions, exclusive of a score or letter-grade. As used in this study, the term an annotation refers not to a single symbol, comment or statement, but to the entire system of correction and criticism that a teacher writes on one composition.

Composition annotation is treated extensively in the professional literature of the field of English education. The many pamphlets, articles and monographs on the subject comprise a valuable canon, perhaps especially to beginning teachers. For the most part, the matters that these works treat are specific aspects of just one general attribute or dimension of annotation. This particular attribute might be called the "external dimension," or the "relational dimension," because it is through this that an annotation is directly related to the student composition, qua composition, on which it appears.

To be sure, because composition annotation is an instructional tool, the raison d'etre of any annotation lies in its relationship to the composition on which it is written. At the same time, as is the case with all tools, the use of annotation is likely to become more efficient as the breadth and depth of knowledge about its general nature increases. Thus, it seems reasonable

to believe that the general properties or dimensions of annotation as a thing in itself, even though these dimensions exist independently of the relations of any particular annotation to its composition, are worth knowing. It is quite probable that these general dimensions of annotation, found in most annotations or in typical annotations irrespective of their particular applications, have a significant effect not only on the teacher who writes an annotation but also on the student who reads it that is independent of the logical relationship between the annotation and the composition.

Yet, despite the fact that we may take for granted the existence of this kind of general properties of annotation, we do not really know what these dimensions are, nor do we know anything specific about them, such as their relative and comparative significance. This, then, is the very important problem whose solution was undertaken in the present study: to identify the dimensions or general factor-structure of composition annotation and to try to determine the significance of the different dimensions.

II. RELATED RESEARCH

Annotation is a variety of written verbal communication, and a great deal of annotation contains discourse, even of a sustained nature. Accordingly, this study was based in part on the following hypothesis: the major dimensions of composition annotation correspond to those of compositions themselves. The hypothesis is indirectly supported by the idea of the simplicity of the semantic space, as outlined in Osgood, Tannenbaum and Suci (The Measurement of Meaning, 1957). It is directly supported by the findings of two published reports of factor analytic studies of compositions. Carroll ("Vectors of Prose Style," in Style in Language, ed. Sebeok, 1960) chose a sample of 150 passages of different types and styles of prose, and had each passage rated by eight competent judges on twenty-nine seven-step bipolar adjective scales. His analysis extracted five general factors to which he applies meaningful description. These factors appear in Table 1, with the variables that in Carroll's opinion have substantial loadings (.25 or higher). In the second relevant study, Remondino had ten judges rate each of 230 secondary school autobiographical essays on each of seventeen three-step bipolar scales. His analysis extracted four general factors, which are given in Table 2 (with the variables loading .25 or higher).

TABLE 1

Carroll's General Dimensions of Composition (or "Vectors of Prose Style")

Factor I: General Stylistic Evaluation

profound--superficial
meaningful--meaningless
succinct--wordy
graceful--awkward
vigorous--placid
elegant--uncouth
natural--affected
clear--hazy
interesting--boring
strong--weak
original--trite
ordered--chaotic
vivid--pale
precise--vague
varied--monotonous
pleasant--unpleasant
good--bad

Factor II: Personal Affect

vigorous--placid
lush--austere
intimate--remote
interesting--boring
opinionated--impartial
vivid--pale
personal--impersonal
emotional--rational
florid--plain

Factor III: Ornamentation

lush--austere
elegant--uncouth
opinionated--impartial
complex--simple
florid--plain

TABLE 1 (Carroll's Dimensions of Composition)

Factor IV: Abstractness

profound—superficial
subtle—obvious
abstract—concrete
elegant—uncouth
original—trite
complex—simple

Factor V: Seriousness

profound—superficial
meaningful—meaningless
earnest—flippant
natural—affected
masculine—feminine
serious—humorous

TABLE 2

Remondino's Dimensions of Composition

Factor I: Graphic Representation

readability
aesthetic arrangement
appearance

Factor II: Language Usage

spelling
word forms and inflections
syntax
diction (vocabulary)
style

Factor III: Content and Organization

pattern of ideas
richness of ideas
adequacy of thoughts to subject
accuracy of facts
completeness or comprehensiveness
conciseness

Factor IV: Personal Aspects

originality
imaginativeness
maturity

A comparison of the findings of these two studies creates a strong impression that the general factor-structure of written composition, at least of prose, is much the same for a number of different types of composition. It can be seen that Remondino's "language usage" and "content and organization" are included in Carroll's "general stylistic evaluation." One general factor in each analysis is interpreted as the personal aspect or "affect." The general factor of appearance probably is excluded from Carroll's analysis because of a standard format. Finally, a strong point of mutual validation of these two studies is the fact that the compositions used in one (Remondino's) were in Italian and those for the other were in English.

Furthermore, not only do these two studies support the hypothesis basic to the present study, but they also provide a good prototype for dealing with the present research problem. They demonstrate that the factor-analyzing of the ratings along semantic-differential type scales applied to written composition yields interpretable findings. The concepts embodied in the scales used by Carroll and by Remondino, together with the theories of Osgood et al. about the general meaning of the semantic space, made a strong framework within which the instrument used in the present study was designed.

III. OBJECTIVES OF THE STUDY

A. To factor-analyze composition annotation as measured with bipolar adjective semantic-differential type scales

B. To test the hypothesis that the general factor-structure of composition annotation corresponds to that of compositions

C. To interpret meaningfully the findings of the factor analysis in terms of the major dimensions of annotation

D. To produce, or point the way to the production of, a conceptual instrument whose use will make possible further research on the dynamics of composition annotation as an instructional device

IV. PROCEDURES

In brief, the procedures were as follows. Four sets of compositions were written by students at each of five grade levels, 9-13. These sets represented the four combinations of two different writing conditions and two different modes of composition. The manuscripts were converted to typescripts literatim, and each was annotated by a classroom English teacher. Then, thirty-two classroom English teachers, divided into four groups, each group equalized by sex and by teaching level (school or college), judged the annotations of 313 of the compositions on thirty-two bipolar semantic-differential type scales in a balanced incomplete design in which each annotation was judged on each scale four times, once by one judge of each type. The matrix of the intercorrelations of these ratings was analyzed by three different methods: 1) a canonical factor analysis,[2] an image analysis, and[3] an incomplete components analysis. These kinds of analysis were performed on the intercorrelation matrix published by Remondino.

It was originally proposed that only two sets of compositions be used, with as much difference as possible in respect both to writing topic and to writing condition (see p. 7 of Appendix A of the contract). However, during

the period when details of the design were being planned, a decision was made to increase the number of different sets of compositions to four (noted in the technical progress report of March 14, 1965), in order to separate the two factors, topic and writing condition, so that their effects would not be confounded and unanalyzable. For that reason, it was decided that the sample of compositions annotated for the judging should contain about 160 that had been written impromptu and an equal number that had been done at home, and, further, that half of the compositions in each of these groups should be on one expository topic and the other half on one narrative-descriptive topic. At all five grade levels, the teachers who assigned the compositions, in both the take-home and the impromptu situations, gave the two topics as follows:

EXPOSITORY TOPIC

> We often hear people say that 'the best things in life are free.' After you have given this idea some thought, write a well-organized essay of some length in which you do one (and only one) of these three things:
>
> 1) Discuss why you feel that the idea is basically true
>
> 2) Discuss why you feel that the idea is basically false
>
> 3) Discuss why you feel that the idea cannot be considered basically either true or false

NARRATIVE-DESCRIPTIVE TOPIC

> With this assignment, you are being given a chance to show your ability to write imaginative description and narration. You are to write an imaginary anecdote in which you find yourself in a situation of great personal danger.

That the two topics are decidedly different goes without saying. On the other hand, the expository topic merits a few words of explanation. It was felt that an extremely vague and general expository topic ought to be used that would tend to minimize grade level differences that could be attributed

to the possession of specialized knowledge. It is true that a topic on the idea that "the best things in life are free" might be very poor if used for instructional purposes, but as a means of helping to screen out certain sources of variability in a composition-based experiment, the topic seems to have considerable value (see this author's final report on CRP 1528, Comparative Effectiveness of Composition Skills Learning Activities in the Secondary School, 1963).

From the compositions furnished by a number of teachers, a sample was chosen that came within as wide a range of community and school type and of ability level as possible. The sample was equalized on the basis of topic, of writing condition, of grade level, and of sex of writer. Literatim, the manuscripts were put into typescripts, in standard format. Each composition in the sample was then given to a classroom English teacher of that grade level at which the composition had been written. This teacher became the annotator. He was asked to imagine that he had made the particular assignment to one of his classes and that one of his students had submitted that particular composition. He was asked to annotate the composition as he would in his own teaching situation, and to make whatever comments, criticism and corrections he would ordinarily make, using whatever kind of pen or pencil he would ordinarily use.

It was planned to have a sample of 320 judged. These were divided into eight replications of each sex of writer for each of the five grade levels for each topic and for each writing condition (eight replications of a 5x2x2x2 factorial). As it turned out, seven of these cells were finally lacking one composition apiece (a fact that has no bearing on the results of the study),

so that the number in the sample finally judged was 313.

The original plan (pp. 7-8 of Appendix A) called for two sets of annotated compositions, each containing 150. One set was to be judged by a panel of eight judges, then the other set by a different eight-judge panel. In this kind of design, the two sets of annotations and the two groups of judges would have functioned actually as two replications of one study. When the design was expanded in order to free the factors of topic and of writing condition from possible confounding, with the result that this replication was collapsed into a single experiment, it became necessary to increase the number of judges from sixteen to thirty-two (noted in the March 14 progress report) for the purpose of fitting the judges factor into the balanced design. This particular design will be explained shortly.

During the period when the compositions were being gathered, processed, and annotated, and when the problems of the change in design were being worked through, the project personnel were analyzing the possible specific variables that would be used in making up the items of the judging instrument—the semantic-differential type bipolar adjective scales. Two particular aspects of this instrument had to be finally determined as part of the planning phase of the study: 1) the number of slots or steps to a scale, and 2) the concepts to be embodied in the scales. It was originally thought that a small pilot judging done with the chief investigator's students (teacher candidates in English) might serve as one of the bases for certain of these decisions, but as the form of the design emerged during its time of development, it became apparent that the difficulty of setting up any pilot judging would tend to make the obtained data from the pilot judging useless or perhaps

misleading. Thus, regarding the number of scale steps, it was decided to use the standard seven-step form recommended by Osgood et al. (The Measurement of Meaning, p. 85). In regard to the concepts to be embodied in the scales, a list of possible scales was compiled from the suggestions of appropriate bipolar adjective pairs received from project personnel and from English teachers and scholars, which was added to a basic list taken from the Carroll and the Remondino studies to form a prototype of the final instrument. It should be noted that as the final form of the judging design became clear, it could be seen that the number of new scales that could be used was quite limited because the total number of scales in the instrument would be closely dictated by the judging design.

An incomplete balanced type of judging design was thought necessary for the following reasons. For the purposes of the different factor analyses, it provided reliable sets of scale scores on the annotations by including four ratings for each scale-annotation combination, the means of which ratings were used in the factor analyses. The design was "incomplete" in the sense that each judge did not rate each of the 313 annotations on each of the thirty-two scales--a task plainly impossible. It is assumed that any possible source of error that might otherwise be attributable to this incompleteness can be ignored on the basis of the balancing, because this balancing had the effect of giving to each of the levels of the writing and judging factors an equal weight in the correlation matrix being factored. This favorable situation was achieved through a very complicated counterbalancing on a random basis within Graeco-Latin squares.

Once the necessity for this kind of design had been established, the

interrelationships among the three strategic variables (scales, judges, and annotations), the inanimate variables (day, batch, session, etc.), and the logistics of judging sessions determined that the number of scales in the final form of the instrument should be thirty-two. Because one of the primary objectives of this experiment was to test the hypothesis that the factor-structure of composition annotation is similar to that of compositions themselves, it was necessary to build the final form of the instrument on a corpus of scales taken from the Carroll and the Renondino studies. With the hypothesis-testing aim dictating the choice of most of the scales, the idea was abandoned that was considered at the beginning of the study, that a pilot judging involving the chief investigator's undergraduate students might help in reducing the prototype of the instrument to its final form. It became apparent that to make the design of such a pilot judging sound and its analysis useful would have been costly, and it was quite doubtful that the choice of the small number of adjective pairs to be added to those taken from the earlier studies should be influenced by the ratings of judges with no experience in teaching writing or in annotating compositions, when the instrument was to be applied by experienced classroom English teachers. The thirty-two adjective pairs finally chosen to be used in the judging will be discussed in the next section of this report.

The over-all design, the materials, and the procedures of the judging were as follows. A total of 320 annotated compositions were chosen as the sample. Half were on the expository topic, and half on the narrative-descriptive topic. Half were impromptu, and half had been written at home. Half had been written by males, and half by females. One fifth had been

written by students at each of the grade levels 9-13. These factors were crossed equally, so that the smallest cell of the sample was a total of eight annotated compositions: students of one sex at one grade level writing on one topic and under one condition. There were forty such cells. After this sample had been determined, the annotated compositions were re-grouped into balanced batches through a random process. There were, immediately after the re-grouping, eight of these batches of forty annotated compositions each. Each batch was equalized for sex of writer, grade level, topic, and writing condition. In other words, in terms of those four factors, all eight batches were exactly alike. These batches remained intact throughout the judging. For one reason or another (e. g., mutilation), one annotated composition in each of seven of the eight batches did not survive to the end of the judging. Because of this, the sample size from which data were finally analyzed was 313 annotated compositions.

Selected as judges were thirty-two competent classroom English teachers: eight school males, eight school females, eight college males, and eight college females. A different group of eight, equalized by sex and by teaching level (two persons from each of the four types given above), was chosen as randomly as possible to be the panel of judges on each of four successive judging days. On each day, eight judging sessions were planned. Thus, during each of the eight daily judging sessions each of the eight judges applied scales to each annotation in one of the eight batches of annotated compositions.

The thirty-two bipolar adjective scales were divided randomly into different subsets of four. A judge used the four scales of one particular subset

throughout one session, applying these four scales to each of the thirty-nine or forty annotations (the term an annotation referring, it should be recalled, to everything an annotator has written on the composition) in his particular batch for that session. For each session each judge was given a new subset of four scales. On each day, then, each of the judges applied all scales and judged all annotations, but to one annotation a judge applied only four scales. The design was counterbalanced further in respect to the order of batches by session by judge type. That is, over the whole judging each batch was judged by one of the judges of each type during each of the eight day-sessions. The order of the annotations within batches was as random as possible. At the end of each session, the batches were subjected to a shuffling technique before being passed on to another judge. The order of the two adjectives within each scale was random. The order of the scales within each subset was random. There were 256 such subsets (eight for each of thirty-two judges), made up as randomly as possible. Because the judges each applied the same four scales of a particular subset to thirty-nine or forty annotations before going on to a different subset, any possible effect attributable to the order in which four scales appeared on the actual instrument was decreased by instructions to the judges to vary the order of application of the four scales from one annotation to the next. In physical format, the judging instrument was nothing more than an 8½ x 11 sheet on which was ditteed the batch designation, the judge code number, and the particular four seven-slot bipolar adjective scales. A sample is given in Appendix A. The manner in which the judges were instructed will be described shortly. In the following tables is given the judging design counterbalanced within Graeco-Latin squares.

TABLE 3

Design of Judging for First Day*

Judge Type	Session 1	Session 2	Session 3	Session 4
SM_1	A 2-13-9-25	D 4-11-17-32	G 10-9-21-28	B 1-29-20-27
SM_2	B 6-9-22-16	C 23-5-24-27	H 8-1-21-2	A 3-14-20-28
SF_1	C 1-3-13-18	G 26-22-15-31	E 6-21-19-14	D 25-11-9-5
SF_2	D 24-8-12-20	H 23-6-16-1	F 27-3-30-25	C 9-11-15-7
CM_1	E 14-25-30-26	A 20-32-29-7	C 28-22-4-18	F 11-15-31-2
CM_2	F 26-22-30-17	B 23-32-20-15	D 14-3-21-9	E 2-12-16-7
CF_1	G 8-26-2-11	F 12-17-18-27	A 4-25-1-20	H 10-19-16-29
CF_2	H 5-3-23-1	E 4-20-15-26	B 21-8-31-14	G 32-12-7-18

* The letters A, B, C, . . . H designate batches. The numerals 1, 2, 3, . . . 32 designate scales. The letters SM, SF, CM, and CF designate school male, school female, college male, and college female respectively.

TABLE 3 (Design of Judging for First Day)

Judge Type	Session 5	Session 6	Session 7	Session 8
SM_1	F 6-7-24-31	E 5-8-22-30	C 3-15-18-16	H 12-14-23-26
SM_2	E 31-13-17-32	F 11-29-18-30	D 23-5-24-27	G 4-15-7-25
SF_1	A 28-27-17-16	B 23-8-2-32	H 4-20-30-10	F 12-29-7-24
SF_2	B 21-17-26-18	A 5-19-22-4	G 13-2-14-28	E 31-10-32-29
CM_1	G 27-6-9-8	H 16-13-21-3	B 17-24-10-19	D 1-5-12-23
CM_2	H 19-24-6-31	G 29-5-11-28	A 13-10-18-4	C 1-8-25-27
CF_1	D 7-21-5-28	C 15-31-3-30	E 9-14-24-22	B 6-32-13-23
CF_2	C 29-13-19-25	D 2-9-22-10	F 30-24-6-28	A 16-11-27-17

TABLE 4

Design of Judging for Second Day*

Judge Type	Session 1	Session 2	Session 3	Session 4
SM_3	H 15-18-3-19	E 11-23-7-21	C 9-30-14-25	F 12-16-1-26
SM_4	G 12-30-32-31	F 14-22-8-21	D 9-29-2-18	E 16-25-4-20
SF_3	F 16=28-31-32	B 22-29-4-10	H 5-2-14-9	A 25-23-6-20
SF_4	E 26-25-8-1	A 7-3-24-12	G 5-21-20-9	B 16-11-14-15
CM_3	D 32-29-15-17	H 7-2-5-1	B 27-3-25-31	G 19-30-23-13
CM_4	C 2-9-20-32	G 15-16-26-14	A 6-23-17-31	H 4-25-11-30
CF_3	B 11-2-28-30	C 8-32-9-22	E 10-16-31-21	D 20-27-24-23
CF_4	A 32-21-22-10	D 1-14-13-16	F 19-2-9-15	C 23-26-5-11

*The letters A, B, C, . . . H designate batches. The numerals 1, 2, 3, . . . 32 designate scales. The letters SM, SF, CM, and CF designate school male, school female, college male, and college female respectively.

TABLE 4 (Design of Judging for Second Day)

Judge Type	Session 5	Session 6	Session 7	Session 8
SM_3	B 13-32-5-17	D 6-27-8-28	G 2-24-29-20	A 10-31-4-22
SM_4	A 11-26-7-23	C 6-19-1-17	H 13-27-5-10	B 15-28-3-24
SF_3	D 7-1-21-13	G 3-11-18-8	E 12-15-30-27	C 24-19-17-26
SF_4	C 32-4-10-31	H 18-17-27-29	F 23-6-2-13	D 28-19-30-22
CM_3	F 18-12-10-6	A 9-8-24-28	C 16-26-21-14	E 11-22-4-20
CM_4	E 28-10-1-21	B 5-18-12-29	D 7-13-22-27	F 24-19-3-8
CF_3	H 13-12-18-15	F 3-4-5-1	A 6-14-26-7	G 19-17-29-25
CF_4	G 31-28-27-24	E 12-8-29-6	B 4-18-7-3	H 17-25-20-30

TABLE 5

Design of Judging for Third Day*

Judge Type	Session 1	Session 2	Session 3	Session 4
SM_5	F 19-28-27-13	B 18-4-26-12	A 21-1-29-15	D 23-7-31-25
SM_6	E 29-3-27-10	A 17-6-30-16	B 23-2-31-11	C 21-4-26-12
SF_5	A 29-21-14-32	D 17-26-16-18	C 8-2-12-23	G 6-1-27-10
SF_6	B 25-19-24-6	C 27-14-20-5	D 15-31-10-4	H 3-8-32-22
CM_5	G 25-2-10-21	F 28-23-20-27	E 6-13-15-24	A 5-3-14-19
CM_6	H 23-14-27-8	E 32-29-17-18	F 21-25-7-4	B 22-26-28-9
CF_5	D 19-26-25-17	H 11-2-7-31	G 5-6-9-23	F 16-22-21-32
CF_6	C 21-6-27-18	G 14-1-22-10	H 32-26-8-9	E 30-5-2-28

*The letters A, B, C, . . . H designate batches. The numerals 1, 2, 3, . . . 32 designate scales. The letters SM, SF, CM, and CF designate school male, school female, college male, and college female respectively.

TABLE 5 (Design of Judging for Third Day)

Judge Type	Session 5	Session 6	Session 7	Session 8
SM_5	G 11-5-3-16	H 20-6-30-17	E 14-2-24-9	C 22-8-32-10
SM_6	H 24-7-32-28	G 18-8-19-13	F 20-5-25-9	D 22-1-14-15
SF_5	E 24-5-9-22	F 20-11-19-4	B 7-3-28-30	H 15-25-31-13
SF_6	F 17-18-21-9	E 11-13-23-28	A 2-1-26-30	G 7-16-29-12
CM_5	C 17-7-29-31	D 16-30-18-26	H 12-32-9-22	B 1-8-4-11
CM_6	D 2-19-6-20	C 13-11-10-5	G 24-31-12-3	A 16-1-15-30
CF_5	A 28-30-8-15	B 29-1-12-20	C 14-10-24-4	E 13-3-18-27
CF_6	B 16-25-24-17	A 29-31-19-12	D 11-15-3-4	F 20-7-13-23

TABLE 6

Design of Judging for Fourth Day*

Judge Type	Session 1	Session 2	Session 3	Session 4
SM_7	C 31-20-11-7	G 22-23-14-6	E 26-28-12-1	H 25-29-16-4
SM_8	D 30-20-16-5	H 31-22-11-9	F 10-23-3-4	G 27-26-17-1
SF_7	H 19-21-7-26	E 20-3-16-17	B 31-12-13-9	F 1-8-5-14
SF_8	G 32-20-19-17	F 10-15-26-22	A 9-13-8-31	E 18-7-2-4
CM_7	B 13-21-2-30	C 7-20-22-1	H 17-29-18-28	D 4-10-31-24
CM_8	A 22-12-2-21	D 28-8-25-11	G 18-4-17-32	C 30-23-3-24
CF_7	E 17-11-7-1	A 9-5-23-13	C 2-12-28-16	B 27-19-22-15
CF_8	F 31-29-11-14	B 10-5-26-9	D 30-12-8-6	A 3-2-24-18

*The letters A, B, C, . . . H designate batches. The numerals 1, 2, 3, . . . 32 designate scales. The letters SM, SF, CM, and CF designate school male, school female, college male, and college female respectively.

TABLE 6 (Design of Judging for Fourth Day)

Judge Type	Session 5	Session 6	Session 7	Session 8
SM_7	D 24-21-13-3	A 27-18-9-5	B 30-19-10-8	F 32-17-15-2
SM_8	C 28-29-13-2	B 25-21-14-7	A 32-24-12-8	E 19-18-6-15
SF_7	G 23-25-24-4	C 6-22-28-30	D 27-32-29-2	A 10-18-11-15
SF_8	H 24-12-28-11	D 3-6-14-23	C 21-25-16-29	B 5-1-27-20
CM_7	A 11-25-27-26	E 8-9-23-3	F 16-32-5-14	G 7-20-22-1
CM_8	B 16-6-7-14	F 13-1-29-9	E 31-5-27-19	H 10-26-20-15
CF_7	F 10-26-25-8	G 20-30-3-4	H 24-21-14-6	D 18-32-29-31
CF_8	E 23-32-25-19	H 4-22-27-28	G 15-21-16-13	C 7-1-17-20

This was the design as planned, but a small variation occurred during the actual judging. The two college women scheduled for the first day, one of the college women scheduled for the second day, and one of the school men scheduled for the fourth day were absent at those times. These four judged during a fifth, or make-up, day. Only the order of batches for judge SM_g was altered from the design, and that but slightly. It should be noted also that the counterbalancing of the design does not encompass the distribution of scales within sessions. In other words, during certain sessions certain scales were being applied by more than one judge, and by the same token during certain other sessions certain scales were not being applied at all. It was simply unfeasible to attempt to carry the counterbalancing to this extreme. It is assumed that neither the lack of counterbalancing in this respect nor the make-up judging sessions had a significant effect on the obtained data.

The judges were instructed orally by the chief investigator at the beginning of the day. In this orientation the most basic principle impressed upon the judges was that they respond to the simultaneous stimuli of scale and annotation in the most genuine and most thoughtful way possible in terms of their own knowledge and experience. The viewpoint was taken that because each judge was assumed to be a competent classroom teacher, the degree of trust that can be put in the data and analysis is in direct relation to the degree with which the judge relied on his own education, own experience, and own ideas about composition annotation, and, conversely, it was felt that the findings would be misleading to the extent that judges should apply the concepts gratuitously, from a standpoint of second-guessing what their fellow-judges or the project personnel might be thinking and of anticipating what

the results of the experiment would be. Therefore, the chief investigator made no attempt to structure the judging in light of any particular concepts embodied in the scales. The sum of his directions in this regard was for the judges to be themselves, to respond naturally, to take for granted their knowledge and competence and to trust their own judgment.

The second principle given the judges during their orientation was that a scale was to be applied to an annotation independently of the composition on which the annotation appeared. There are three reasons for this, one theoretical, one methodological and the other logistical. First, part of the rationale for this study is the idea that composition annotation does constitute a formidable and important kind of communication in and of itself, that certain properties of annotation are general, and independent of any particular composition, and that an investigation of this aspect of the nature of annotation might well make it a better teaching device. Second, introducing the annotated compositions as a factor would have confounded the experimental design. And third, requiring judges not simply to read the composition and the annotation but to evaluate one in terms of the other as well would have rendered the experiment economically unfeasible.

The third principle urged on the judges was that they apply every scale, regardless of their opinion of the concept embodied in the bipolar adjectives.

The two main points of procedure in which the judges were instructed were that of working independently, arbitrarily abstracted from any concern for what the other judges might be doing, and that of working swiftly and unhesitatingly. The latter was especially important. Speed was the <u>sine qua non</u> for responding genuinely, for excluding from consideration the annotated

composition, and for applying every scale however obscure or seemingly irrelevant. The average time for the judging sessions, including the shuffling of the artifacts within the batches, was about one hour. The judging took place on August 16-20, 1965.

The judging having been so designed and the procedures having been so executed, the immediate product was the raw data. Each datum was in the form of an X marked in a particular slot on each of 40,064 scales. The scales were on 10,016 dittoed sheets. After converting the marks to numbers on a 1-7 scale, clerks summed the four numbers for each scale on each annotation and entered the sums on standard data sheets, from which the cards were punched.

V. ANALYSES OF THE DATA AND FINDINGS

The data were analyzed through standard computer programs in the University of Wisconsin Computing Center. First, a correlation matrix of the total ratings was obtained (Table 8, Appendix B). Three methods of analysis were used on this matrix: a variation of Rao's canonical factor analysis, an incomplete components analysis extracting components with eigenvalues larger than unity, and an image analysis. The unrotated and rotated factor matrices for these are in Tables 8-14. The standard normalized Varimax rotational procedure was employed. All loadings of .35 or higher are considered significant.

The thirty-two bipolar adjective scales applied to the 313 annotations are these:

(taken from or adapted from Carroll's scales and Remondino's variables)

profound--superficial
trivial--significant
placid--vigorous
dull--interesting
precise--vague
simple--complicated
subtle--obvious
concise--wordy
remote--intimate
abstract--concrete
logical--inconsistent
earnest--flippant
plain--ornamental

coherent--incoherent
awkward--graceful
tasteful--boorish
attractive--unattractive
ordered--chaotic
natural--affected
biased--objective
warm--hostile
neat--sloppy
legible--illegible
literal--figurative

(scales added to the basic corpus derived from the earlier studies)
lengthy--abbreviated
complete--fragmentary
pointed--aimless
constructive--destructive
realistic--unrealistic
flattering--disparaging
dogmatic--diplomatic
stern--playful

Three ideas lie behind the choice of adjective pairs to be added to the corpus taken from the Carroll and the Remondino studies. One idea was to introduce the factor of length (e. g., lengthy--abbreviated), another was to strengthen the attitudinal factor (e. g., destructive--constructive), and the third was to strengthen the appearance factor (e. g., legible--illegible).

The number of general factors extracted in both the factor analysis and the incomplete components was four, and in the image analysis three. Each of the thirty-two variables turned up with one or more significant loading. The table that follows summarizes the general and the specific factors extracted.

TABLE 7

Summary of the General and Specific Factors Extracted

		Factor Analysis	Incomplete Components	Image Analysis
Factor I:	Competence and Adequacy			
	lengthy--abbreviated	.88	.87	.86
	complete--fragmentary	.84	.85	.84
	profound--superficial	.83	.83	.82
	trivial--significant	.82	.82	.79
	placid--vigorous	.78	.81	.76
	pointed--aimless	.76	.76	.73
	dull--interesting	.73	.79	.75
	precise--vague	.70	.75	.70
	simple--complicated	.64	.73	.67
	subtle--obvious	.59	.63	.60
	concise--wordy	.57	.60	.54
	remote--intimate	.56	.61	.58
	abstract--concrete	.51	.60	.53
	logical--inconsistent	.49	.52	.50
	earnest--flippant	.46	.46	.46
	constructive--destructive	.43	.42	.42
	realistic--unrealistic	.41	.48	.46
	plain--ornamental	.36	.46	.40
	coherent--incoherent		.41	.37
	awkward--graceful		.36	.35
Factor II:	Helpfulness and Positiveness			
	flattering--disparaging	.86	.87	.79
	warm--hostile	.83	.85	.77
	dogmatic--diplomatic	.74	.80	.71
	constructive--destructive	.64	.69	.60
	tasteful--boorish	.61	.64	.58
	stern--playful	.56	.54	.47
	remote--intimate	.48	.50	.45
	awkward--graceful		.38	.36

TABLE 7 (Summary of General and Specific Factors Extracted)

		Factor Analysis	Incomplete Components	Image Analysis
Factor III:	Appearance			
	neat--sloppy	.72	.79	.62
	legible--illegible	.71	.79	.61
	attractive--unattractive	.54	.64	.52
	coherent--incoherent	.47	.60	.42
	graceful--awkward	.39	.47	.40
	ordered--chaotic		.41	.36
Factor IV:	Appropriateness			
	natural--affected	.63	.78	
	wordy--concise	.40	.51	
	realistic--unrealistic		.41	
	coherent--incoherent		.39	
Factors with Single Significant Loadings:				
	biased--objective	.67	.86	.46
	literal--figurative	.62	.84	.46
	plain--ornamental	.65		.45
	stern--playful		.60	.41
	concrete--abstract	.57		.40
	coherent--incoherent	.47		.46
	attractive--unattractive	.44		.36
	ordered--chaotic	.59		
	subtle--obvious	.53		
	natural--affected			.50
	logical--inconsistent	.47		

TABLE 7 (Summary of General and Specific Factors Extracted)

	Factor Analysis	Incomplete Components	Image Analysis
realistic--unrealistic	.45		
earnest--flippant	.39		
wordy--concise			.39

Although it was not part of the proposal for this study, an analysis of variance was performed, as a matter of interest, for the following reasons. The possibility exists that one or more of the factors in the writing of the compositions might have interacted with one or more of the scales, resulting in a factor that represents some combination of topic and writing condition variables and scale variables. Because of this possibility, the analysis of variance was performed on a grade level of writer by topic by writing condition by sex of writer by scales model. On the basis of a lack of significant interaction between the scale factor and any combination of the other factors, the possibility that topic and writing condition variables might have influenced the final factor structures is rejected. Only two of the interactions studied are significant, scale by grade level and scale by sex of writer. The complete analysis of variance summary appears in Table 15.

Finally, as was originally proposed, the intercorrelation matrix published by Remondino was subjected to the same kinds of analyses given the data of the present study. Remondino's correlation matrix, the unrotated and rotated factor matrices, and a summary of the general and specific factors extracted appear in Tables 16-23.

VI. CONCLUSIONS AND IMPLICATIONS

A description of how the most basic objective of this study, to factor-analyze composition annotation as measured with bipolar adjective scales, was achieved is given of course in the sections on procedures and analysis.

The second objective was to test the hypothesis that the general factor-structure of annotation corresponds to that of compositions. This hypothesis is decidedly confirmed. The first general factor extracted in this analysis closely resembles both Carroll's and Remondino's first factors. The second general factor extracted resembles Carroll's second, and the third Remdonino's second.

The third objective was to give the findings meaningful interpretation. On the basis of these findings, several conclusions of considerable significance can be drawn.

The most important general dimension of annotation (Factor I) is termed "Competence and Adequacy." This seems to be a general content-style factor that reflects a three-fold question that competent English teachers want to know about any annotation. Does the annotation have scope or fulness (e. g. lengthy--abbreviated and complete--fragmentary), does the annotation have depth (profound--superficial and trivial--significant), and does the annotation

have direction (placid--vigorous and pointed--aimless)?

The second most important general dimension is clearly the factor of tone or attitude, termed "Helpfulness and Positiveness." The two-fold question reflected in this dimension is, does the annotation offer encouragement (flattering--disparaging and constructive--destructive), and does the annotation have kindliness (warm--hostile and dogmatic--diplomatic)?

The third general factor is clearly the dimension of physical format, termed "Appearance." This dimension is reflected in the two-fold question, what are the physical or visual properties of the annotation, and are these properties pleasing to the eye?

The fourth general factor extracted from the analyses, having only two significant loadings in the factor analysis and four in the incomplete components, is more difficult to interpret than are the first three. As applied here, the term "Appropriateness" means that this general dimension seems to be related to the question of how fitting the annotator's comments, criticism and corrections are to the task of annotating, and to the general nature of annotations, per se. It is not surprising that this general dimension appears to be somewhat in conflict, so to speak, with the other general dimensions. In other words, we might imagine an English teacher looking, for example, at a particular annotation that he judges to have scope, depth and direction, to be encouraging and to reflect warmth, and to be pleasing to the eye to be nevertheless inappropriate as an annotation, perhaps impressing him actually as a tour de force.

The fourth objective of the study was "to produce, or lead to the production of, a conceptual instrument whose use will make possible certain kinds

of research on the dynamics of annotation as feedback" (p. 6, Appendix A of the contract). By "conceptual instrument" is meant, in plain terms, a researchable idea. The implications of the present study's findings for further research on annotation more directly relevant to its instructional use are strong.

It might be advisable, as an initial cautionary step, to replicate this experiment as follows: a smaller sample of annotations rated by fewer judges on many more variables. Harris (in a paper read at the National Conference on Research Design in English, San Francisco, November, 1963) suggests that the appearance of a specific factor may indicate the existence of a common factor in the domain of variables that is not extracted because of the limited number of variables employed. Because of the great number of specific factors that appear in the factor analysis and the image analysis in this study, such a small replication, whose purpose would be to explore the variable domain thoroughly, is indicated. Quite probably the first three general factors found here would be much the same, but useful minor general factors might appear.

The next research step that is implied in the findings of this study is to ascertain the general dimensionality of annotation as determined by student judges. It seems probable that the three major factors obtained in such an experiment would be much the same as Factors I, II, and III extracted in this study, but validation would be useful, and any possible alteration in relative importance attributable to the student viewpoint should be known.

The ultimate research step could then be an experiment designed to measure and analyze the effects on students of annotations that have

significant variation in general dimensionality. The findings of such an ultimate experiment would appear to have great immediate value to teachers of English composition, because the findings of such an experiment would indicate explicitly the role and function of the general or "abstract" and internal dimensions of annotation within the "external" or "relational" dimension.

(Sample of Judging Instrument Score Sheet)

ANNOTATION NO. _____ READER NO. _____

SCALE NO.

(32) ABBREVIATED | _____ | LENGTHY

(11) DULL | _____ | INTERESTING

(19) NATURAL | _____ | AFFECTED

(15) BIASED | _____ | OBJECTIVE

BATCH NO._____

TABLE 8

Intercorrelation Matrix

	Variables										
Variables	1	2	3	4	5	6	7	8	9	10	11
1	1.00	-.01	-.14	.44	-.50	-.55	-.52	.45	-.41	.17	-.49
2	-.01	1.00	.43	-.02	.24	.02	.19	-.11	.21	.31	.31
3	-.14	.43	1.00	-.10	.37	.28	.35	-.07	.29	.41	.49
4	.44	-.02	-.10	1.00	-.34	-.36	-.32	.20	-.27	.25	-.36
5	-.50	.24	.37	-.34	1.00	.54	.59	-.41	.57	.04	.62
6	-.55	.02	.28	-.36	.54	1.00	.64	-.33	.41	-.07	.63
7	-.52	.19	.35	-.32	.59	.64	1.00	-.42	.44	-.01	.68
8	.44	-.11	-.07	.20	-.41	-.33	-.42	1.00	-.27	.08	-.38
9	-.41	.21	.29	-.27	.57	.41	.44	-.27	1.00	.01	.51
10	.17	.31	.41	.25	.04	-.07	-.01	.08	.01	1.00	.11
11	-.49	.31	.49	-.36	.62	.64	.68	-.38	.51	.11	1.00
12	-.07	.36	.48	.00	.23	.20	.27	-.05	.26	.36	.35
13	.11	.40	.08	-.02	-.01	-.18	-.16	-.01	.03	.11	.02
14	.51	-.13	-.27	.21	-.40	-.49	-.54	.34	-.23	-.07	-.56
15	-.09	.26	.27	-.11	.24	.10	.16	.04	.24	.22	.16
16	-.58	.27	.41	-.38	.70	.68	.71	-.48	.53	.00	.65
17	.11	.72	.33	.13	.11	-.17	.04	.01	.12	.25	.15
18	-.29	.34	.46	-.10	.43	.31	.40	-.28	.26	.24	.41
19	.10	.17	.16	.00	.03	.08	.03	.24	.09	.11	.08
20	-.35	.54	.51	-.20	.49	.47	.51	-.30	.48	.12	.66
21	-.17	.63	.51	-.06	.41	.24	.43	-.22	.34	.25	.51
22	-.27	.27	.39	-.21	.48	.41	.45	-.10	.44	.15	.52
23	-.57	.22	.37	-.32	.61	.65	.71	-.46	.49	.01	.65
24	.01	.65	.43	.07	.16	.02	.17	.06	.18	.25	.24
25	.13	-.15	-.20	.13	-.04	-.14	-.18	.07	-.05	-.05	-.20
26	.12	.22	.30	.16	.07	-.04	.01	.01	.07	.50	.19
27	.02	.38	.45	.13	.21	.11	.18	.01	.13	.56	.32
28	-.30	.24	.42	-.15	.41	.46	.45	-.22	.32	.19	.43
29	-.45	.22	.40	-.20	.55	.61	.68	-.37	.46	.13	.61
30	-.23	.21	.49	-.01	.37	.39	.28	-.09	.46	.37	.49
31	-.13	.63	.57	.00	.36	.14	.34	-.13	.33	.36	.41
32	-.55	.27	.35	-.34	.66	.64	.71	-.59	.47	-.04	.68

TABLE 8 (Intercorrelation Matrix)

	Variables										
Variables	12	13	14	15	16	17	18	19	20	21	22
1	-.07	.11	.51	-.09	-.58	.11	-.28	.10	-.35	-.17	-.27
2	.36	.40	-.13	.26	.27	.72	.34	.17	.54	.63	.27
3	.48	-.08	-.27	.27	.41	.33	.46	.16	.51	.51	.39
4	.00	-.02	.21	-.11	-.38	.13	-.10	.00	-.20	-.06	-.21
5	.23	-.01	-.40	.24	.70	.11	.43	.03	.49	.41	.48
6	.20	-.18	-.40	.10	.68	-.17	.31	.08	.47	.24	.41
7	.27	-.16	-.54	.16	.71	.04	.40	.03	.51	.43	.45
8	-.06	-.01	.34	.04	-.48	.01	-.28	.24	-.30	-.22	-.10
9	.26	.03	-.23	.24	.53	.12	.26	.09	.48	.34	.44
10	.36	.11	-.07	.22	.00	.25	.24	.11	.12	.25	.15
11	.35	.02	-.56	.16	.65	.15	.41	.08	.66	.51	.52
12	1.00	-.04	-.21	.12	.36	.22	.37	.13	.39	.39	.31
13	-.04	1.00	.00	.04	-.08	.48	-.10	.06	.16	.25	-.02
14	-.21	.00	1.00	-.08	-.49	-.02	-.29	-.02	-.37	-.34	-.28
15	.12	.04	-.08	1.00	.24	.19	.31	.16	.16	.15	.37
16	.36	-.08	-.49	.23	1.00	.08	.48	.06	.59	.49	.45
17	.22	.48	-.02	.19	.08	1.00	.22	.19	.38	.55	.15
18	.37	-.10	-.29	.31	.48	.22	1.00	.11	.39	.40	.31
19	.13	.06	-.02	.17	.06	.19	.11	1.00	.15	.18	.23
20	.39	.16	-.37	.16	.59	.38	.39	.15	1.00	.59	.48
21	.39	.25	-.34	.15	.49	.55	.40	.18	.59	1.00	.42
22	.31	-.02	-.28	.37	.45	.15	.31	.23	.48	.42	1.00
23	.32	-.12	-.55	.18	.76	.04	.43	-.01	.53	.44	.39
24	.33	.36	-.10	.22	.22	.65	.24	.19	.48	.56	.28
25	-.01	-.15	.20	-.04	-.17	-.17	.03	.04	-.21	-.19	-.14
26	.21	.16	.02	.17	.03	.17	.24	.00	.12	.21	.15
27	.37	.15	-.21	.30	.27	.36	.33	.04	.36	.33	.31
28	.37	-.10	-.36	.19	.50	.13	.37	.19	.37	.30	.39
29	.41	-.13	-.43	.15	.67	.07	.43	.07	.50	.46	.40
30	.42	.05	-.24	.25	.39	.14	.36	.25	.48	.34	.45
31	.40	.24	-.25	.36	.39	.55	.43	.15	.50	.60	.42
32	.32	-.05	-.54	.10	.79	.08	.49	.00	.62	.51	.38

TABLE 8 (Intercorrelation Matrix)

	Variables									
Variables	23	24	25	26	27	28	29	30	31	32
1	-.57	.01	.13	.12	.02	-.30	-.45	-.23	-.13	-.55
2	.22	.65	-.15	.22	.38	.24	.22	.21	.63	.27
3	.37	.43	-.20	.30	.45	.42	.40	.49	.57	.35
4	-.32	.07	.13	.16	.13	-.15	-.20	-.01	.00	-.34
5	.61	.16	-.04	.07	.21	.41	.55	.37	.36	.66
6	.65	.02	-.14	-.04	.11	.46	.61	.39	.14	.64
7	.71	.17	-.18	.01	.18	.45	.68	.28	.34	.71
8	-.46	-.06	.07	.01	.01	-.22	-.38	-.09	-.14	-.50
9	.49	.18	-.05	.06	.13	.32	.46	.46	.33	.47
10	.01	.25	-.05	.51	.56	.19	.13	.37	.36	-.04
11	.65	.24	-.20	.19	.32	.43	.61	.49	.41	.68
12	.32	.33	-.01	.21	.37	.37	.41	.42	.40	.32
13	-.12	.36	-.15	.16	.15	-.10	-.13	.05	.24	-.05
14	-.55	-.10	.20	.02	-.21	-.36	-.43	-.24	-.25	-.54
15	.18	.22	-.03	.17	.30	.19	.15	.25	.36	.10
16	.76	.22	-.17	.03	.27	.50	.67	.39	.39	.79
17	.04	.65	-.17	.17	.36	.13	.07	.14	.55	.08
18	.43	.24	.03	.24	.33	.37	.43	.36	.43	.49
19	-.01	.19	.04	.00	.04	.19	.07	.25	.15	.00
20	.53	.48	-.21	.12	.36	.37	.50	.48	.50	.62
21	.44	.56	-.19	.21	.33	.30	.46	.34	.60	.51
22	.39	.28	-.14	.15	.31	.39	.40	.45	.42	.38
23	1.00	.22	-.22	-.03	.25	.44	.64	.29	.39	.77
24	.22	1.00	-.22	.14	.41	.19	.18	.21	.56	.22
25	-.22	-.22	1.00	.07	-.12	-.05	-.16	-.09	-.19	-.13
26	-.03	.14	.07	1.00	.39	.14	.08	.38	.25	.02
27	.25	.41	-.12	.39	1.00	.31	.16	.37	.45	.20
28	.44	.19	-.05	.14	.31	1.00	.48	.39	.36	.44
29	.64	.18	-.16	.08	.16	.48	1.00	.42	.35	.69
30	.29	.21	-.09	.38	.37	.39	.42	1.00	.43	.34
31	.31	.56	-.19	.25	.45	.36	.35	.43	1.00	.33
32	.77	.22	-.13	.02	.20	.44	.69	.34	.33	1.00

TABLE 9

Unrotated Factor Matrix, Factor Analysis

Variables	Factors							
	I	II	III	IV	V	VI	VII	VIII
1	.56	-.44	.10	-.07	.04	.16	-.11	-.07
2	-.47	-.66	-.30	.00	.07	.00	.00	.02
3	-.59	-.37	.24	.00	-.02	.09	.05	.05
4	.33	-.35	.19	-.31	.00	.14	-.21	-.07
5	-.74	.16	-.01	.12	.17	-.22	.00	.05
6	-.69	.42	.13	.11	-.11	.11	.03	-.09
7	-.78	.27	-.03	-.07	-.01	.12	.10	.14
8	.47	-.29	.26	.28	.00	.31	.17	-.03
9	-.60	.08	.04	.35	.14	-.17	-.15	-.05
10	-.17	-.53	.48	-.26	-.08	-.10	.03	.05
11	-.82	.08	.06	.11	-.26	-.03	-.01	.10
12	-.48	-.28	.26	-.13	.09	.22	-.14	-.08
13	-.03	-.47	-.35	.15	-.26	-.27	-.03	.00
14	.59	-.20	.01	.16	.30	-.03	-.21	-.18
15	-.28	-.23	.19	.19	.32	-.17	.37	.03
16	-.86	.22	-.04	-.02	.14	-.03	.04	-.12
17	-.27	-.74	-.35	.02	.03	.01	.02	.03
18	-.58	-.13	.15	-.21	.30	-.08	.00	.10
19	-.12	-.22	.13	.33	.11	.32	-.01	.03
20	-.76	-.20	-.12	.15	-.14	.05	-.14	-.18
21	-.66	-.41	-.21	-.05	-.02	.11	-.11	.13
22	-.59	-.10	.20	.34	.04	.05	.13	.04
23	-.81	.27	-.07	-.14	.02	.04	.12	-.10
24	-.41	-.62	-.25	.01	.00	.12	.06	-.13
25	.22	.08	.15	-.04	.32	-.12	-.25	.04
26	-.16	-.39	.41	-.13	-.10	-.30	-.15	.12
27	-.40	-.48	.31	-.21	-.12	-.14	.25	-.26
28	-.58	-.01	.23	-.03	.11	.13	.07	.01
29	-.76	.17	.09	-.10	.07	.19	-.14	.13
30	-.54	-.19	.48	.23	-.09	-.07	-.24	-.03
31	-.58	-.54	.00	.02	.10	-.03	.08	.13
32	-.84	.25	-.16	-.16	.03	-.03	-.13	-.07

TABLE 9 (Unrotated Factor Matrix, Factor Analysis)

Variables	Factors							
	IX	X	XI	XII	XIII	XIV	XV	XVI
1	.00	.23	-.04	.12	.07	-.03	.06	.02
2	.11	-.01	.00	.03	-.04	.08	-.10	.03
3	.17	-.04	.20	-.05	.04	-.03	.18	-.08
4	-.34	.01	-.18	-.14	.01	.03	.03	-.07
5	-.06	.09	-.04	.06	-.10	-.05	.14	-.06
6	.04	-.06	-.10	.09	.06	.09	.00	-.06
7	-.09	.14	-.01	.01	.02	.11	-.01	-.01
8	.04	.07	-.01	.07	-.05	-.10	-.03	-.15
9	-.21	.02	.12	-.01	-.16	-.02	-.06	-.05
10	-.03	-.02	.06	.13	-.01	-.03	-.07	.04
11	.08	.15	.00	-.04	-.05	.04	-.02	-.05
12	.12	-.04	.19	-.01	-.21	-.08	-.09	.10
13	-.01	-.14	-.05	.22	.02	-.06	.00	.01
14	.03	.16	.15	.11	.12	.14	.04	-.04
15	-.05	.00	-.04	-.03	.17	-.01	-.17	.02
16	.01	-.05	.01	.08	.03	-.05	.05	.00
17	-.06	-.05	-.07	.03	-.05	.07	.02	-.11
18	.20	-.05	-.08	-.18	.11	-.02	-.02	-.12
19	.08	-.11	-.30	.10	.04	-.14	-.04	.00
20	.08	.06	-.01	-.14	.03	.07	-.03	.01
21	-.04	.08	-.02	.04	.03	-.18	.05	.02
22	-.09	.18	-.07	-.07	.04	-.03	.03	.22
23	-.07	.01	.07	.01	-.03	-.07	-.07	-.07
24	-.06	-.02	.03	-.04	.04	.00	-.01	.03
25	.16	.14	-.27	-.04	-.24	-.01	-.07	-.02
26	.07	.13	-.04	.13	.10	.04	-.05	-.01
27	-.03	.10	-.07	.01	-.06	.01	.02	-.01
28	.05	-.03	-.12	.11	-.16	.20	.14	.11
29	-.11	-.03	.09	.14	.05	.08	-.09	-.02
30	-.06	-.19	-.02	-.06	.07	-.03	.00	-.01
31	-.09	-.08	.07	-.12	.02	.05	.09	.05
32	.04	.02	-.06	.01	.06	-.05	.00	.05

Appendix B

TABLE 10

Rotated Factor Matrix, Factor Analysis

Variables	Factors I	II	III	IV	V	VI
1 simple--complicated	-.64	.08	-.15	-.12	-.07	-.04
2 warm--hostile	.14	.83	-.15	-.04	-.03	-.13
3 awkward--graceful	.30	.34	-.39	-.13	.18	-.28
4 plain--ornamental	.36	-.06	.19	.01	.07	.03
5 vague--precise	-.70	-.14	.07	-.02	.13	-.06
6 placid--vigorous	-.78	.16	.01	.20	-.13	.00
7 trivial--significant	-.82	-.08	.01	-.01	-.09	.06
8 wordy--concise	-.57	-.08	-.03	-.40	.07	.09
9 abstract--concrete	.50	.14	-.01	-.02	-.06	-.07
10 neat--sloppy	.07	-.20	.72	.03	-.06	.21
11 dull--interesting	-.73	-.19	.23	.06	-.08	.03
12 ordered--chaotic	-.26	-.24	.29	.12	.04	.59
13 stern--playful	.17	-.56	.13	.01	-.12	-.28
14 subtle--obvious	.59	.05	-.07	-.03	.14	-.01
15 biased--objective	-.10	-.15	.17	.12	-.01	.00
16 fragmentary--complete	-.84	-.14	.02	.03	-.04	.11
17 flattering--disparaging	.04	.86	.09	.06	-.02	-.04
18 earnest--flippant	.46	.21	-.25	-.03	- .20	-.15
19 natural--affected	.00	-.16	.01	.63	.05	.04
20 remote--intimate	-.56	-.48	.09	.10	-.08	.12
21 constructive--destructive	.43	.64	-.17	-.13	.06	-.12
22 realistic--unrealistic	.41	.16	-.15	-.26	.07	-.08
23 profound--superficial	.83	.09	.02	.07	.12	-.17
24 dogmatic--diplomatic	-.10	-.74	.08	.08	-.16	.14
25 literal--figurative	.13	.18	.02	.04	.62	.02
26 legible--illegible	.01	-.13	.71	-.02	.11	-.05
27 attractive--unattractive	-.15	-.32	.54	-.02	-.08	.12
28 logical--inconsistent	.49	.11	-.18	-.19	-.03	-.17
29 pointed--aimless	.76	.08	-.14	-.09	.09	-.22
30 coherent--incoherent	-.33	-.08	.47	.29	-.08	.11
31 tasteful--boorish	.24	.61	-.26	.03	-.11	.13
32 lengthy--abbreviated	.88	.17	.01	.05	.03	.08

TABLE 10 (Rotated Factor Matrix, Factor Analysis)

Variables	Factors									
	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI
1	.11	.05	.20	-.08	.20	-.27	.06	.08	-.08	.06
2	-.11	-.02	-.08	-.01	.03	-.01	-.02	-.03	.08	.00
3	-.07	.06	-.10	-.09	-.10	.00	-.36	-.11	-.04	.07
4	-.10	-.02	-.65	-.03	-.04	.01	.00	.00	.00	.00
5	.15	-.06	.15	.10	.26	.01	.08	.07	.19	-.02
6	.00	-.09	.11	.02	.10	-.01	.02	.11	-.14	-.03
7	.09	.08	.00	.18	-.03	-.05	.02	.07	-.01	-.15
8	-.07	.11	.01	-.03	.01	-.06	.02	.04	-.03	-.30
9	-.16	-.02	-.10	-.08	.57	-.06	.06	.01	-.04	.05
10	.13	-.04	-.14	-.03	.02	-.07	.01	.07	.06	-.02
11	-.05	-.03	.19	.23	.17	-.15	.08	-.03	-.13	-.14
12	-.01	-.03	-.03	-.02	.09	-.01	.06	.08	-.01	.00
13	-.11	-.02	.19	-.12	.10	-.07	-.18	-.06	.05	.12
14	.02	.04	-.02	-.03	.06	.53	-.01	-.03	-.01	-.01
15	.67	-.03	.07	.04	.07	.01	.04	.02	.00	-.01
16	.14	-.11	.11	-.01	.11	.05	.07	.07	.08	.10
17	.06	-.02	-.08	-.04	.03	.00	.03	.05	.02	-.08
18	-.28	-.03	.03	.06	.05	.04	-.40	-.02	.04	-.06
19	.09	.02	.00	.03	.04	-.01	.01	.05	.00	.01
20	-.05	-.14	.07	.17	.22	.03	.10	-.05	-.26	.06
21	.03	-.08	.04	-.15	-.02	.04	-.08	.12	-.16	-.03
22	-.29	.05	-.08	-.45	-.22	.02	.01	-.06	.00	.00
23	-.12	.12	-.02	.03	-.04	.07	-.01	.03	-.04	.04
24	.10	-.12	-.09	.06	.02	.04	.02	.00	-.03	.03
25	-.01	.01	-.04	-.01	.01	.04	.01	.01	.01	.00
26	.04	.04	-.01	.04	.05	.05	.04	-.03	-.03	.01
27	.21	-.44	-.11	.05	-.03	-.06	.00	.09	-.02	-.05
28	-.08	.04	-.01	-.04	-.03	.04	-.05	-.47	.00	-.01
29	-.02	-.23	.07	.01	-.07	-.07	-.01	-.07	.00	.06
30	.06	.00	-.06	.05	.47	-.04	.14	.07	-.13	.13
31	-.25	-.06	.07	-.14	-.15	.08	-.19	-.15	-.05	-.01
32	.03	.03	-.04	-.03	-.01	.00	-.07	.04	.00	-.18

TABLE 11

Unrotated Factor Matrix, Incomplete Components Analysis

Variables	Factors						
	I	II	III	IV	V	VI	VII
1	-.54	.53	.11	.01	-.13	.13	-.04
2	.51	.59	-.36	.00	.06	.16	.06
3	.64	.35	.18	-.01	.13	-.07	.04
4	-.31	.42	.22	-.32	-.21	.22	-.06
5	.73	-.24	-.01	.07	.28	.05	-.03
6	.66	-.47	.13	.00	-.14	-.09	-.09
7	.76	-.34	-.02	-.05	-.11	.02	.10
8	-.44	.36	.25	.44	-.25	-.11	.04
9	.61	-.14	.01	.27	.30	.02	-.26
10	.24	.59	.44	-.28	-.02	-.19	.01
11	.82	-.15	.01	-.01	-.02	-.15	-.18
12	.52	.28	.28	-.10	-.25	.24	-.06
13	.05	.46	-.52	.01	.24	-.26	-.31
14	-.59	.26	.05	.18	.22	.20	-.08
15	.33	.24	.19	.37	.40	-.16	.55
16	.83	-.29	-.04	-.01	.03	.06	.07
17	.32	.69	-.43	.02	.02	.13	.04
18	.61	.10	.21	-.14	.17	.28	.29
19	.15	.25	.14	.64	-.28	.21	-.13
20	.77	.12	-.19	.06	-.06	.03	-.20
21	.69	.35	-.26	-.05	-.09	.15	-.09
22	.63	.06	.16	.39	.04	-.14	.02
23	.78	-.33	-.06	-.11	-.08	.01	.13
24	.45	.58	-.36	.04	-.11	.09	.09
25	-.23	-.05	.34	.02	.42	.63	-.15
26	.20	.44	.41	-.29	.33	-.20	-.26
27	.45	.50	.25	-.22	.00	-.24	.18
28	.61	-.02	.26	.05	-.16	.12	-.05
29	.75	-.22	.11	-.07	-.16	.12	-.05
30	.59	.19	.41	.13	.03	-.16	-.37
31	,63	.49	-.08	.02	.06	.02	.14
32	.81	-.32	-.13	-.16	.01	.14	-.04

TABLE 12

Rotated Factor Matrix, Incomplete Components Analysis

Variables	Factors I	II	III	IV	V	VI	VII
simple—complicated	-.73	.11	.13	.14	-.12	.08	-.13
warm—hostile	.13	.85	.15	.03	.02	.03	.10
awkward—graceful	-.36	-.38	-.47	-.21	.13	.12	-.12
plain—ornamental	-.46	.10	.30	-.03	-.32	.12	-.30
vague—precise	-.75	-.14	-.07	-.01	-.14	-.18	-.22
placid—vigorous	-.81	.15	-.03	-.19	.01	.11	.00
trivial—significant	-.82	-.10	-.01	-.01	.15	.09	-.07
wordy—concise	-.59	-.10	.06	.51	-.06	-.15	.11
abstract—concrete	.60	.12	.09	.22	.35	.22	.15
neat—sloppy	-.10	.20	.79	.01	-.14	-.07	.07
dull—interesting	-.79	-.18	-.24	-.11	-.14	.11	.00
ordered—chaotic	.31	.30	.41	.25	-.33	.10	-.12
stern—playful	.17	-.54	-.07	.11	-.60	.13	.07
subtle—obvious	.63	.05	.09	-.09	-.12	-.32	-.03
biased—objective	.09	.16	.18	.11	-.02	.02	.86
fragmentary—complete	-.85	-.18	-.05	-.02	.06	-.01	-.14
flattering—disparaging	-.08	.37	.10	.04	.07	-.02	.05
earnest—flippant	.46	.28	.28	-.07	-.33	.27	.29
natural—affected	-.02	.19	-.04	.78	-.05	.07	.05
remote—intimate	-.61	-.50	-.16	-.19	-.13	.05	.06
constructive—destructive	.42	.69	.18	.10	-.01	-.01	-.08
realistic—unrealistic	.48	.16	.22	.41	.10	-.07	.34
profound—superficial	.83	.14	.01	-.06	-.15	-.11	.08
dogmatic—diplomatic	-.08	-.80	-.11	-.11	.04	.13	-.06
literal—figurative	.15	.18	.00	.02	.08	-.84	.01
legible—illegible	-.03	.08	.79	-.10	.20	.17	.03
attractive—unattractive	.12	.33	.64	-.04	-.14	-.19	.22
logical—inconsistent	.52	.11	.25	.25	-.26	.02	.09
pointed—aimless	.76	.12	.15	.12	-.18	.01	-.07
coherent—incoherent	.41	.07	.60	.39	.20	.05	.00
tasteful—boorish	.28	.64	.33	.09	-.04	.04	.24
lengthy—abbreviated	.87	.21	.01	-.10	-.06	.06	-.05

TABLE 13

Unrotated Factor Matrix, Image Analysis

Variables	Factors I	II	III	IV	V	VI	VII	VIII	IX	X	XI
1	.55	.41	.09	.05	.04	-.10	-.09	-.02	-.03	-.11	.00
2	-.46	.62	-.25	.01	.04	.01	.00	.00	.05	.00	.02
3	-.58	.35	.21	.00	-.01	-.06	.02	.01	.05	.04	.11
4	.32	.33	.16	.22	.01	-.09	-.12	-.01	-.12	.00	-.11
5	-.72	-.15	.00	-.08	.09	.17	.01	.03	-.02	-.04	-.02
6	-.68	-.40	.11	-.09	-.07	-.09	.81	-.05	.04	.00	-.05
7	-.77	-.25	-.02	.04	.01	-.09	.06	.09	-.04	-.05	-.01
8	.47	.27	.22	-.23	.04	-.20	.07	-.01	.01	-.04	.01
9	-.59	-.07	.03	-.25	.07	.15	-.09	-.02	-.11	.03	.02
10	-.17	.50	.42	.20	-.07	.05	.04	.02	-.02	.02	.00
11	-.81	-.07	.06	-.08	-.18	.00	-.01	.06	.02	-.06	.03
12	-.47	.26	.23	.10	.08	-.13	-.11	-.05	.02	.04	.09
13	-.03	.45	-.29	-.10	-.20	.16	.01	-.01	.02	.04	-.06
14	.58	.18	.01	-.10	.13	.06	-.14	-.08	-.05	-.05	.06
15	-.28	.21	.17	-.15	.21	.12	.23	.01	-.01	-.01	-.02
16	-.84	-.20	-.03	.02	.09	.03	.02	-.07	.00	.01	-.01
17	-.27	.70	-.29	-.02	.02	.00	.01	.02	.00	.01	-.04
18	-.57	.12	.14	.15	.19	.08	.00	.03	.11	.00	.02
19	-.12	.21	.11	-.26	.10	-.19	-.05	.01	.10	.00	-.12
20	-.75	.19	-.10	-.11	-.10	-.03	-.10	-.09	.01	-.03	.03
21	-.65	.39	-.17	.04	-.01	-.06	-.08	.08	-.02	-.03	-.01
22	-.58	.09	.17	-.26	.04	-.02	.06	.04	-.05	-.08	-.01
23	-.79	-.25	-.06	.10	.02	-.04	.08	-.05	-.05	.00	.01
24	-.40	.59	-.21	-.01	.01	-.09	.04	-.07	-.04	.01	.00
25	.22	-.08	.13	.03	.19	.13	-.18	.01	.09	-.10	-.05
26	-.15	.36	.36	.12	-.11	.20	-.07	.05	.02	-.06	-.01
27	-.39	.45	.27	.15	-.08	.05	.17	-.12	-.02	-.07	-.03
28	-.57	.01	.20	.01	.09	-.08	.03	.00	.07	.05	-.07
29	-.74	-.16	.08	.07	.05	-.11	-.10	.07	-.05	.04	-.01
30	-.53	.18	.40	-.16	-.08	.06	-.14	-.03	-.01	.09	-.03
31	-.57	.51	.01	-.02	.07	.03	.06	.07	-.03	.06	.02
32	-.83	-.23	-.13	.13	.01	.02	-.08	-.03	.02	-.02	-.02

TABLE 13 (Unrotated Factor Matrix, Image Analysis)

Variables	Factors										
	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX	XX	XXI	XXII
1	.04	.02	.00	.02	.00	.00	.00	.01	.01	.00	.02
2	.01	-.01	.02	-.02	.00	.00	.00	.00	.01	.00	.01
3	.01	.02	-.01	.03	-.01	.00	.00	.00	.01	-.01	-.01
4	-.08	.00	.00	.01	-.01	.00	.00	.00	.01	-.01	-.01
5	.02	-.03	-.01	.02	-.01	.00	-.01	.00	-.02	-.01	.00
6	.02	.01	.03	.00	-.01	.00	.00	.00	.01	-.02	.02
7	.00	.00	.03	.00	.00	.00	.01	.00	.00	.00	-.04
8	.03	-.02	-.03	-.01	-.02	.00	.00	.00	-.01	-.01	.01
9	.00	-.04	-.01	-.01	-.01	.00	.00	.00	.01	.01	-.01
10	.05	-.01	-.01	-.01	.01	.00	-.01	.00	.00	.01	-.03
11	-.02	-.02	.01	.00	-.01	.00	.00	.00	.00	.00	.01
12	.01	-.06	-.02	-.01	.01	.00	.01	.00	-.01	-.01	.01
13	.08	.00	-.01	.00	.00	.00	.01	.00	-.01	-.03	.00
14	.05	.03	.05	.01	-.01	.00	.00	-.01	.00	.01	.00
15	-.01	.05	.00	-.03	.00	.00	.00	.01	.00	-.01	.02
16	.03	.01	-.01	.01	.00	.00	.00	.00	.00	.01	-.02
17	.00	-.02	.02	.00	-.01	.00	.00	.00	-.01	.02	.01
18	-.07	.04	-.01	-.01	-.02	.00	.00	.00	-.02	.01	.01
19	.02	.02	-.04	-.01	.00	.00	.00	.01	.00	.02	-.04
20	-.05	.01	.02	.00	.00	.00	-.01	.00	.00	.01	-.02
21	.02	.01	-.05	.01	.00	.00	.00	-.01	.01	.01	.01
22	-.03	.01	.00	.01	.03	.00	-.00	-.01	-.01	.00	.03
23	.01	-.01	-.02	-.01	-.01	.00	.00	.00	.02	.00	.02
24	-.02	.01	.00	.00	.00	.00	.00	-.01	-.01	-.03	-.03
25	-.04	-.07	-.01	-.01	.00	.00	.00	.00	.01	-.04	-.03
26	.04	.03	.02	-.01	.00	.00	.01	-.01	.02	.00	.00
27	-.01	-.02	.00	.00	.00	.00	.00	.00	-.01	.01	.00
28	.02	-.05	.05	.03	.01	.00	.00	-.01	.01	.02	.02
29	.05	.01	.02	-.02	.00	.00	.00	.00	-.02	-.01	.01
30	-.02	.02	-.01	.00	.00	.00	.00	.00	.00	.00	.01
31	-.04	.01	.01	.02	.00	.00	.00	.01	.02	-.02	.00
32	.00	.02	-.01	.00	.01	.00	.00	.00	-.01	.00	.01

TABLE 13 (Unrotated Factor Matrix, Image Analysis)

Variables	Factors									
	XXIII	XXIV	XXV	XXVI	XXVII	XXVIII	XXIX	XXX	XXXI	XXXII
1	-.03	.02	.00	-.03	.05	.06	-.01	.04	.16	.00
2	-.01	.00	-.05	.02	.01	.03	.12	-.12	-.01	.00
3	.03	.06	.00	-.02	-.02	-.08	.02	-.13	.02	.03
4	.00	.07	-.06	.02	-.07	-.02	.01	-.06	-.18	.11
5	-.02	-.01	-.07	.05	.04	.01	.02	.07	-.04	-.07
6	-.03	-.01	.03	-.05	.05	.00	-.09	-.05	-.04	-.07
7	.00	-.01	-.04	-.06	.06	-.05	.07	-.01	-.04	.01
8	.06	-.05	-.04	.03	.03	.05	-.02	-.01	-.03	.19
9	.02	.02	.03	-.07	.03	.12	-.07	-.13	-.03	.00
10	-.01	-.03	.02	-.02	.04	-.03	-.08	.03	.00	.20
11	-.04	.01	.04	.06	-.05	.02	.02	.02	-.06	.12
12	-.05	.02	-.04	-.02	.03	-.05	-.08	.04	-.14	-.10
13	.01	.01	-.04	-.11	-.10	-.02	.05	.06	-.09	.11
14	-.02	-.06	.03	.00	-.06	-.08	.05	.03	-.17	.06
15	.03	.10	.05	.04	.08	-.05	.00	.10	-.14	-.02
16	-.02	.04	.00	.02	-.04	.01	-.01	-.01	.06	.11
17	-.01	.01	.03	.00	.04	-.10	-.10	-.02	.09	.02
18	-.03	-.02	-.02	-.11	-.03	.12	.01	.05	-.01	.09
19	-.03	-.02	-.02	.04	-.11	-.02	-.04	-.05	-.09	-.18
20	.04	.02	-.03	-.02	-.01	.00	-.06	.15	.01	-.05
21	.01	.00	.07	-.03	.04	.02	.05	.08	-.10	-.07
22	-.01	.00	-.03	-.05	-.08	-.05	-.03	-.08	.11	.09
23	.00	-.03	-.03	.00	-.05	-.06	.00	.08	.07	.00
24	-.02	.00	.01	.05	.04	.10	.00	.02	.06	.05
25	.03	.00	.08	-.02	-.04	-.10	.03	.01	.17	.05
26	.02	.01	-.08	.05	-.01	.03	-.13	-.01	.04	-.15
27	.01	-.03	.06	-.02	-.05	.03	.09	-.07	-.03	-.20
28	.04	.01	.01	.01	.02	.06	.04	.12	-.06	.10
29	.03	.01	.03	.02	-.08	.04	.03	.01	.09	-.10
30	-.02	-.03	-.01	.02	.09	-.05	.17	.02	.10	.02
31	.00	-.08	.02	.02	-.06	.01	-.10	.03	.00	-.04
32	.03	-.03	.01	.03	.04	-.02	-.04	-.09	-.05	.07

TABLE 14

Rotated Factor Matrix, Image Analysis

Variables		Factors I	II	III	IV	V	VI	VII	VIII
1	simple--complicated	.67	.10	.12	-.01	.12	-.10	-.10	.00
2	warm--hostile	-.15	.77	.16	-.09	-.06	.03	.06	-.07
3	awkward--graceful	.35	-.36	.40	.17	.05	.05	.11	.07
4	plain--ornamental	.40	.05	.19	-.01	-.01	.00	-.04	-.01
5	vague--precise	.70	-.12	-.09	.06	.01	-.01	-.20	-.01
6	placid--vigorous	.76	.14	-.04	.14	.12	.05	-.02	.02
7	trivial--significant	.79	-.09	-.01	-.10	-.07	-.07	.03	-.03
8	wordy--concise	.54	-.05	.04	-.16	-.02	-.02	.07	.03
9	abstract--concrete	-.53	.13	.07	-.11	-.01	.03	.12	.02
10	neat--sloppy	.06	.23	.62	.05	.02	.02	.12	.01
11	dull--interesting	.75	-.19	-.18	.05	.12	-.09	.05	-.01
12	ordered--chaotic	-.29	.24	.36	-.19	-.06	-.10	.09	-.01
13	stern--playful	-.15	-.47	-.01	-.03	.09	-.41	.01	-.01
14	subtle--obvious	-.60	.07	.11	.05	-.08	-.06	-.03	-.03
15	biased--objective	-.13	.16	.17	-.11	-.02	.00	.50	-.02
16	fragmentary--complete	.84	-.17	-.04	.00	-.01	.03	-.10	.01
17	flattering--disparaging	.05	.79	.14	-.06	-.01	.03	.06	.05
18	earnest--flippant	-.46	.23	.27	.00	.08	-.04	.14	-.02
19	natural--affected	.00	.13	.07	-.50	-.02	-.01	.07	-.01
20	remote--intimate	.58	-.45	-.16	.13	.09	-.08	-.04	-.01
21	constructive--destructive	-.41	.60	.16	-.11	-.10	.02	.07	-.02
22	realistic--unrealistic	-.46	.20	.19	-.21	.02	.01	.16	-.02
23	profound--superficial	-.82	.12	.03	.04	-.06	-.06	.05	-.07
24	dogmatic--diplomatic	.11	-.71	-.14	.06	.12	.04	.06	-.04
25	literal--figurative	-.14	.16	-.01	-.02	.44	.03	.02	.01
26	legible--illegible	.02	.13	.61	-.06	.03	.02	.03	.04
27	attractive--unattractive	-.14	.32	.52	-.10	-.11	-.03	.15	-.36
28	logical--inconsistent	-.50	.11	.19	-.09	-.02	-.03	.18	-.01
29	pointed--aimless	-.73	.11	.15	-.12	.00	-.13	-.03	-.02
30	coherent--incoherent	-.37	.14	.42	-.16	.06	.01	.11	-.02
31	tasteful--boorish	-.28	.58	.34	-.15	-.07	-.02	.17	.01
32	lengthy--abbreviated	-.86	.18	.02	.05	-.03	-.05	-.02	.01

TABLE 14 (Rotated Factor Matrix, Image Analysis)

Variables	Factors IX	X	XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX	XX
1	.05	-.01	-.05	.02	-.01	.03	-.01	.00	.00	.00	.00	.00
2	-.03	.00	-.03	-.02	.00	-.02	.01	.00	.00	.00	-.06	.00
3	.03	.09	.01	.01	-.01	-.07	.00	.00	.00	.00	.00	.00
4	.04	-.02	-.45	.00	.00	.01	.00	.00	.00	.00	.00	.00
5	.10	.02	-.12	-.01	.00	.01	-.04	.00	.00	.03	-.02	.00
6	.07	.06	-.10	.00	.01	.00	.12	.00	.00	.00	.00	.00
7	-.03	.04	.00	-.02	-.02	-.04	.00	.00	.00	.00	.00	.00
8	-.01	.01	-.05	-.01	-.01	.02	.00	.00	.00	.00	.00	.00
9	-.40	.00	.07	.00	.00	.02	.00	.00	.00	.00	.00	.00
10	.04	-.06	-.16	-.01	-.02	.01	.01	.00	.00	-.02	.01	.00
11	-.04	.00	-.02	.20	.00	-.04	.00	.00	.00	.00	.00	.00
12	.00	-.31	-.12	.00	-.01	-.02	.00	.00	.00	.00	.00	.00
13	.02	-.04	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.06	.07	.11	.00	-.01	.01	.00	.00	.00	.00	.00	.00
15	-.03	-.01	.02	.00	.00	.01	.00	.00	.00	.00	.00	.00
16	.05	.01	-.03	-.01	.01	-.02	-.05	-.03	.00	.00	-.01	-.01
17	.01	-.02	.00	.04	.00	.05	-.02	-.05	.00	.00	.03	.00
18	-.02	-.05	-.05	.00	-.01	..00	.00	.00	.00	.00	.00	.00
19	-.02	-.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.03	.11	-.08	.02	.01	-.02	.00	.00	.00	.00	.00	.00
21	.00	-.10	-.04	-.04	-.01	-.05	.00	.00	.00	.00	.00	.00
22	-.14	.05	.07	-.01	.03	.24	.00	.00	.00	.00	.00	.00
23	.08	-.06	.05	.06	.01	.06	.05	-.01	.00	.01	-.02	.05
24	.02	.01	.02	.02	.00	.02	-.02	-.06	.00	.00	-.02	.00
25	.00	-.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	-.04	.03	.02	.00	.01	.00	-.01	.00	.00	.01	-.01	.00
27	.03	-.01	-.03	.00	.00	.01	.00	.00	.00	.00	.00	.00
28	.04	-.07	-.07	.00	-.17	-.06	.00	.00	.00	.00	.00	.00
29	-.01	-.04	.00	.01	-.04	.02	.01	.00	.00	.00	.00	.00
30	-.08	-.03	.03	-.01	-.01	.02	.00	.00	.00	.00	.00	.00
31	-.05	-.02	.01	.01	-.02	.07	.01	.00	.00	.00	.00	.00
32	-.06	-.03	-.04	.01	.03	-.07	-.03	-.01	.00	.01	-.02	-.05

TABLE 14 (Rotated Factor Matrix, Image Analysis)

Variables	Factors											
	XXI	XXII	XXIII	XXIV	XXV	XXVI	XXVII	XXVIII	XXIX	XXX	XXXI	XXXII
1	.00	.00	-.05	.18	.03	.00	-.04	.01	.01	.04	.02	.09
2	-.05	-.03	.08	.00	-.01	.09	.02	.07	.04	-.07	-.03	-.02
3	.00	.00	-.23	.02	.00	.01	.01	-.03	-.11	.02	-.02	-.07
4	.00	.00	.00	.00	.00	.00	.00	.02	-.02	.00	-.02	.02
5	-.02	.01	.08	-.01	-.02	-.14	-.01	-.01	-.05	.00	.04	.11
6	.00	.00	.00	-.04	.00	.06	-.06	.02	-.04	-.02	-.04	-.02
7	.01	.14	-.03	-.02	-.09	-.02	-.01	-.02	-.05	.04	-.01	-.02
8	.00	.00	.01	.01	.00	.00	.01	.01	.07	.00	-.01	.39
9	.00	.00	.00	.00	.00	.00	.00	.01	.09	.00	-.02	.01
10	.02	.00	.00	-.01	.00	-.13	.01	.07	.07	-.05	.01	.21
11	.00	-.01	-.02	.02	-.04	.00	-.01	.01	-.11	-.04	.02	-.11
12	.00	.00	-.01	.00	.00	.00	.00	-.02	.01	.01	-.04	-.01
13	.00	.00	.01	.00	.00	.00	.00	.02	-.01	-.01	.02	.01
14	.00	.00	.01	.00	.00	.00	.00	.00	.01	.00	.27	-.01
15	.00	.00	.00	.00	.00	.00	.00	.02	.03	.00	-.01	.02
16	.00	-.06	-.03	-.05	.09	.03	.01	-.07	-.03	.00	.02	-.04
17	.00	.01	-.01	.00	-.01	-.06	.03	-.06	-.03	-.01	.03	-.01
18	.00	.00	.01	.00	.00	.00	.00	.33	.00	.00	.00	.02
19	.00	.00	.00	.00	.00	.00	.00	.00	.03	.00	.02	.00
20	.00	-.01	.03	-.02	.01	-.01	.00	.01	-.10	-.23	.01	.00
21	.00	-.02	-.01	.04	.19	.00	-.04	.04	.05	.03	-.01	-.07
22	.00	.00	.04	.01	-.01	.00	-.01	.00	.12	.01	.00	-.20
23	.03	.03	-.02	.01	-.02	.00	-.05	.02	.02	.03	.00	-.01
24	-.01	-.02	.03	-.04	.04	.01	.02	-.05	-.05	-.05	-.01	-.07
25	.00	.00	.00	.00	.00	.00	.00	-.01	-.01	.00	.01	.00
26	-.01	.00	-.02	.02	.00	.07	-.01	-.01	-.01	.04	.01	-.08
27	.00	.00	.02	.00	.00	.00	.00	.02	.04	.00	.02	-.05
28	.00	.00	-.02	.01	.00	-.01	-.03	.14	.11	.02	.02	.14
29	.01	.01	.03	.03	.04	.00	-.20	.05	.07	.00	.01	-.05
30	.00	.00	.01	.00	.00	.00	-.01	.00	.46	.01	.00	.07
31	.11	.01	-.02	-.10	.01	-.03	-.06	.07	.00	.01	-.02	.01
32	-.03	.04	.03	-.02	.02	.00	.08	.02	-.02	-.01	-.06	-.03

TABLE 15

Analysis of Variance Summary Table

Source of Variation	Reduced Sum of Squares	Degrees of Freedom	Mean Square	Significance
Grade level (G)	373.433	4	93.358261	
Writing condition (C)	291.019	1	291.018860	
Topic (T)	296.495	1	296.494934	
Sex of writer (W)	718.464	1	718.463684	
Scales (S)	29215.651	31	942.440351	
GxC	1485.236	4	371.308929	
GxT	379.046	4	94.761520	
GxW	705.814	4	176.453583	
GxS	4869.592	124	39.270903	.01
C xT	109.491	1	109.490723	
CxW	117.266	1	117.265747	
CxS	757.252	31	24.427484	not significant
TxW	9.282	1	9.282410	
TxS	1002.076	31	32.325030	not significant
WxS	1309.391	31	42.238403	.01
GxCxT	697.714	4	174.428589	
GxCxW	1383.874	4	345.968552	
GxCxS	2917.556	124	23.528677	not significant
GxTxW	148.514	4	37.128448	
GxTxS	1605.362	124	12.946470	not significant
GxWxS	2021.061	124	16.287776	not significant
CxTxW	145.475	1	145.475159	
CxTxS	522.130	31	16.842905	not significant
CxWxS	789.838	31	25.478657	not significant
TxWxS	398.422	31	12.852315	not significant
GxCxTxW	1099.693	4	274.923370	
GxCxTxS	2396.894	124	19.329790	not significant
GxCxWxS	2255.167	124	18.188835	not significant
GxTxWxS	1724.178	124	13.904660	not significant
CxTxWxS	407.079	31	13.131582	not significant
GxTxCxWxS	2819.065	124	22.734394	not significant
Individuals within (GxCxTxW)xS	132244.500	6400	20.663203	

TABLE 16

Intercorrelation Matrix, Remondino Study

Variables	Variables 1	2	3	4	5	6	7	8	9
1	1.00	.00	.78	.21	.18	.27	.17	.17	.17
2	.80	1.00	.86	.26	.23	.15	.13	.08	.12
3	.78	.86	1.00	.20	.25	.15	.17	.09	.18
4	.21	.26	.20	1.00	.70	.61	.31	.27	.27
5	.18	.23	.25	.70	1.00	.74	.34	.26	.33
6	.27	.15	.15	.61	.74	1.00	.49	.37	.40
7	.17	.13	.17	.31	.34	.49	1.00	.56	.65
8	.17	.08	.09	.27	.26	.37	.56	1.00	.74
9	.17	.12	.18	.27	.33	.40	.65	.74	1.00
10	.18	.17	.18	.28	.35	.39	.56	.61	.63
11	.17	.22	.19	.27	.32	.38	.54	.48	.64
12	.24	.28	.22	.25	.33	.36	.37	.26	.46
13	.41	.34	.31	.52	.57	.71	.53	.48	.54
14	.31	.31	.34	.49	.58	.73	.52	.52	.55
15	.20	.19	.18	.26	.29	.39	.46	.69	.53
16	.27	.25	.23	.32	.34	.43	.58	.65	.58
17	.18	.18	.14	.29	.30	.37	.46	.64	.54

TABLE 16 (Intercorrelation Matrix, Remondino Study)

Variables	Variables 10	11	12	13	14	15	16	17
1	.18	.17	.24	.41	.31	.20	.27	.18
2	.17	.22	.28	.34	.31	.19	.25	.18
3	.18	.19	.22	.31	.34	.18	.23	.14
4	.28	.27	.25	.52	.49	.26	.32	.29
5	.35	.32	.33	.57	.58	.29	.34	.30
6	.39	.38	.36	.71	.73	.39	.43	.37
7	.56	.54	.37	.53	.52	.46	.58	.46
8	.61	.48	.26	.48	.52	.69	.65	.64
9	.63	.64	.46	.54	.55	.53	.58	.54
10	1.00	.62	.43	.52	.57	.46	.53	.46
11	.62	1.00	.57	.51	.53	.54	.59	.49
12	.43	.57	1.00	.48	.45	.35	.41	.29
13	.52	.51	.48	1.00	.87	.49	.56	.51
14	.57	.53	.45	.87	1.00	.59	.60	.60
15	.46	.54	.35	.49	.59	1.00	.73	.84
16	.53	.59	.41	.56	.60	.73	1.00	.69
17	.46	.49	.29	.51	.60	.84	.69	1.00

TABLE 17

Unrotated Factor Matrix, Factor Analysis, Remondino Study

Variables	Factors I	II	III	IV	V	VI	VII	VIII	IX	X
1	-.50	-.72	.08	.00	.01	.27	-.17	-.02	.04	-.03
2	-.48	-.79	.10	-.03	-.04	-.09	-.03	-.09	-.01	.05
3	-.48	-.78	.11	.04	-.04	-.08	.15	.11	-.01	-.02
4	-.55	.02	-.41	-.05	-.17	-.05	.03	-.25	-.09	.11
5	-.62	.05	-.50	-.02	-.39	-.14	.08	-.04	.01	-.05
6	-.72	.16	-.50	-.04	-.14	.14	-.11	.15	.06	-.04
7	-.64	.23	.11	.31	-.07	.05	-.08	.23	-.17	.26
8	-.67	.34	.39	.10	-.13	.26	.14	-.09	.07	-.01
9	-.69	.28	.28	.41	-.06	.03	.08	.00	-.12	-.15
10	-.65	.21	.16	.33	.02	-.10	.04	-.07	.30	.15
11	-.65	.18	.20	.26	.02	-.33	-.25	.00	.06	-.03
12	-.54	.01	.00	.23	.07	-.30	-.33	-.06	.01	-.17
13	-.86	.05	-.26	.02	.25	.07	-.04	-.12	-.08	.02
14	-.89	.11	-.20	-.03	.23	-.05	.13	.04	.03	.00
15	-.71	.26	.41	-.35	-.08	-.05	-.06	.05	.02	-.04
16	-.74	.18	.29	-.08	-.06	-.03	-.12	.03	-.03	.12
17	-.70	.27	.36	-.35	-.04	-.04	.00	-.03	-.07	.02

TABLE 18

Rotated Factor Matrix, Factor Analysis, Remondino Study

Variables	Factors I	II	III	IV	V
1 readability	-.09	-.87	-.09	.08	.12
2 esthetic arrangement	-.09	-.91	-.12	-.05	.03
3 appearance	-.05	-.91	-.10	.06	.07
4 spelling	-.14	-.13	-.78	.07	.07
5 word forms	-.12	-.13	-.78	.07	.09
6 syntax	-.20	-.05	-.72	.09	.36
7 organization of ideas	-.31	-.05	-.22	.35	.15
8 richness of ideas	-.60	-.02	-.13	.63	.10
9 adequacy of thoughts	-.35	-.05	-.15	.68	.14
10 accuracy of facts	-.30	-.07	-.18	.39	.17
11 comprehensiveness	-.37	-.08	-.14	.21	.09
12 conciseness	-.16	-.16	-.18	.09	.14
13 diction (vocabulary)	-.30	-.23	-.44	.19	.64
14 style	-.41	-.19	-.43	.15	.62
15 originality	-.88	-.09	-.13	.14	.10
16 maturity	-.67	-.15	-.18	.20	.13
17 imagination	-.85	-.06	-.16	.15	.16

Variables	Factors VI	VII	VIII	IX	X
1 readability	.22	-.06	.18	-.03	.03
2 esthetic arrangement	.01	-.14	-.11	.04	-.01
3 appearance	-.21	-.07	-.04	.03	.05
4 spelling	.11	-.08	-.14	.04	.05
5 word forms	-.13	-.17	.04	.04	.03
6 syntax	.03	-.17	.35	.02	.19
7 organization of ideas	.00	-.28	.03	.09	.60
8 richness of ideas	.10	-.09	.05	.18	.10
9 adequacy of thoughts	-.07	-.41	-.02	.01	.21
10 accuracy of facts	-.01	-.40	.00	.49	.16
11 comprehensiveness	-.04	-.68	-.01	.16	.18
12 conciseness	.02	-.68	.03	.00	.04
13 diction (vocabulary)	.12	-.30	.00	.04	.12
14 style	.12	-.25	.04	.14	.10
15 originality	-.14	-.20	.04	.04	.04
16 maturity	-.04	-.29	.00	.10	.24
17 imagination	.06	-.15	-.05	.01	.06

TABLE 19

Unrotated Factor Matrix, Incomplete Components Analysis, Remondino Study

Variables	Factors I	II	III	IV
1	-.43	-.77	-.25	.06
2	-.41	-.82	-.25	.01
3	-.40	-.80	-.26	.00
4	-.56	-.16	.58	.14
5	-.62	-.14	.63	.04
6	-.71	-.04	.56	.05
7	-.71	.21	-.05	-.18
8	-.72	.35	-.26	.18
9	-.76	.27	-.19	-.22
10	-.73	.19	-.12	-.29
11	-.73	.17	-.18	-.37
12	-.59	-.05	-.03	-.55
13	-.83	-.11	.24	-.01
14	-.85	-.04	.20	.08
15	-.75	.24	-.28	.38
16	-.79	.16	-.23	.17
17	-.73	.24	-.24	.42

TABLE 20

Rotated Factor Matrix, Incomplete Components Analysis, Remondino Study

Variables		Factors I	II	III	IV
1	readability	-.11	-.89	.13	-.08
2	esthetic arrangement	-.06	-.94	.12	-.10
3	appearance	-.06	-.92	.10	-.10
4	spelling	-.12	-.12	.82	-.07
5	word forms	-.09	-.09	.87	-.17
6	syntax	-.22	-.05	.87	-.17
7	organization of ideas	-.42	-.02	.27	-.58
8	richness of ideas	-.77	.02	.13	-.37
9	adequacy of thoughts	-.50	-.02	.16	-.67
10	accuracy of facts	-.38	-.05	.20	-.68
11	comprehensiveness	-.35	-.09	.15	-.75
12	conciseness	-.02	-.20	.21	-.75
13	diction (vocabulary)	-.36	-.25	.64	-.40
14	style	-.46	-.21	.62	-.36
15	originality	-.87	-.11	.17	-.20
16	maturity	-.72	-.16	.22	-.37
17	imagination	-.87	-.08	.20	-.15

n. b. Components extracted of eigenvalues greater than unity.

TABLE 21

Unrotated Factor Matrix, Image Analysis, Remondino Study

Variables	Factors I.	II	III	IV	V	VI	VII	VIII	IX
1	-.48	-.69	-.08	.00	.01	-.13	-.11	-.01	.01
2	-.46	-.75	-.11	-.02	-.03	.06	.00	-.02	-.01
3	-.46	-.75	-.10	.02	-.03	.02	.08	.03	.00
4	-.54	.00	.38	-.06	-.26	.02	.02	-.07	-.02
5	-.60	.03	.46	-.03	-.26	.07	.05	.00	.01
6	-.70	.13	.46	-.04	-.08	-.06	-.08	.04	.01
7	-.64	.21	-.08	.23	-.07	-.05	-.04	.07	-.04
8	-.66	.32	-.33	.07	-.09	-.18	.03	-.03	.01
9	-.69	.26	-.22	.31	-.05	-.05	.04	-.01	.01
10	-.65	.19	-.12	.27	.00	.03	.05	-.02	.00
11	-.65	.17	-.17	.23	.00	.22	-.06	.00	.00
12	-.53	.00	.01	.21	.05	.24	-.12	-.02	.03
13	-.84	.03	.24	.02	.17	-.04	-.02	-.03	-.01
14	-.87	.09	.19	-.06	.16	.01	.07	.01	.00
15	-.71	.24	-.35	-.25	-.04	.05	-.02	.01	.01
16	-.74	.17	-.26	-.06	-.04	.04	-.06	.02	-.03
17	-.70	.26	-.31	-.26	-.02	.03	.01	-.01	.00

Variables	Factors X	XI	XII	XIII	XIV	XV	XVI	XVII
1	.00	-.01	.00	-.03	.01	-.06	.05	-.21
2	.00	.00	.00	.04	-.04	.12	-.09	-.03
3	.00	.00	.00	-.01	.03	-.06	.05	.20
4	.00	.00	.03	.06	-.03	-.18	-.03	.00
5	.00	.00	-.03	-.06	.07	.07	.07	-.19
6	.00	.00	.01	.02	-.05	.03	-.06	.21
7	-.01	-.02	-.04	.06	.06	.01	.08	-.16
8	.01	.01	.00	.04	.01	.05	.19	.07
9	-.02	.00	.01	-.03	-.05	-.01	-.20	-.07
10	.03	-.02	-.05	-.02	.01	-.05	-.16	.08
11	.01	-.01	.10	-.01	.03	.02	.16	.00
12	-.01	.02	-.10	.05	-.04	-.06	.14	.07
13	-.01	.00	.00	-.02	.08	.02	-.04	.16
14	.00	.00	.01	.01	-.05	-.02	.04	-.18
15	.00	.00	.00	.04	.08	-.02	-.16	-.07
16	.00	.04	.00	-.07	-.07	-.01	-.05	.03
17	-.01	-.03	-.02	-.04	-.06	.00	.12	.12

TABLE 22

Rotated Factor Matrix, Image Analysis, Remondino Study

Variables	Factors I	II	III	IV	V	VI
1 readability	-.08	-.82	.15	.08	-.04	.04
2 esthetic arrangement	-.08	-.87	.11	.06	.01	.06
3 appearance	-.07	-.86	.11	.03	.09	.13
4 spelling	-.14	-.14	.68	.11	-.06	.08
5 word forms	-.12	-.12	.76	.13	-.09	.12
6 syntax	-.23	-.06	.76	.18	.29	.13
7 organization of ideas	-.35	-.06	.28	.47	-.03	.25
8 richness of ideas	-.64	-.01	.14	.39	.04	.17
9 adequacy of thoughts	-.43	-.06	.20	.69	.02	.14
10 accuracy of facts	-.36	-.08	.23	.57	.12	.22
11 comprehensiveness	-.41	-.10	.19	.37	.01	.47
12 conciseness	-.20	-.17	.23	.23	.05	.51
13 diction (vocabulary)	-.35	-.24	.57	.29	.41	.23
14 style	-.43	-.21	.58	.28	.14	.22
15 originality	-.79	-.10	.18	.21	.01	.04
16 maturity	-.65	-.15	.23	.34	.05	.18
17 imagination	-.80	-.08	.19	.13	.07	.18

n. b. Although this was a complete image analysis, there were only two further loadings, Variable 8 on Factor XVI (.36) and Variable 14 on Factor XVII (.39).

TABLE 23

Summary of the General and Specific Factors Extracted from Analyses of Published Correlation Matrix of Remondino Study

	Factor Analysis	Incomplete Components	Image Analysis
Factor I:			
originality	.88	.87	.79
imagination	.85	.87	.80
maturity	.67	.72	.65
richness of ideas	.60	.77	.64
style	.41	.46	.43
comprehensiveness	.37	.35	.41
adequacy of thoughts	.35	.50	.43
organization of ideas		.42	.35
diction		.36	.35
accuracy of facts		.38	
Factor II:			
appearance	.91	.92	.86
esthetic arrangement	.91	.94	.87
readability	.87	.89	.82
Factor III:			
word forms	.85	.87	.76
spelling	.78	.82	.68
syntax	.72	.84	.76
diction		.64	
style		.62	
Factor IV:			
adequacy of thoughts	.68	.67	.69
richness of ideas	.63	.37	.39
accuracy of facts	.39	.68	.57
organization of ideas	.35	.58	.47
comprehensiveness		.75	.37
conciseness		.75	
diction		.40	
maturity		.37	
style		.36	

TABLE 23 (Summary of the General and Specific Factors Extracted from Analyses of Published Correlation Matrix of Remondino Study)

	Factor Analysis	Incomplete Components	Image Analysis
Factor V:			
diction	.64		.41
style	.62		
syntax	.36		
Factor VI:			
conciseness			.51
comprehensiveness			.47
Factor VII:			
conciseness	.68		
comprehensiveness	.68		
adequacy of thoughts	.41		
accuracy of facts	.40		
Specific Factors:			
organization of ideas	.60		
accuracy of facts	.49		
style			.39
richness of ideas			.36

List of Judges

School:

Mrs. Louise Ackerman, Fulton
Mrs. Minnie Buske, Fulton
Miss Sue Denn, Oswego
Mrs. Hilda Karapin, Phoenix
Mrs. Edith Lee, Oswego Catholic
Mrs. Nora Murtagh, Phoenix
Mrs. Wanda Renick, Fayetteville-Manlius
Mrs. Alison Wood, State College Campus School

Stephen Castor, Webster
Clifford Gay, Phoenix
William Knott, Baldwinsville
Theodore Lemcke, State College Campus School
Charles Loschiavo, Oswego
Bruce McGivney, East Syracuse-Minoa
Rupert McGrath, Oswego
Lawrence Piper, Pulaski

College:

Mrs. Lorraine Desruisseaux, Onondaga Community College
Mrs. Minnie Foster, Syracuse
Miss Susan Keihm, Syracuse
Mrs. Ruth Pencheon, Auburn Community
Mrs. Francine Renik, Syracuse
Mrs. Helen Theimer, State College
Mrs. Blevyn Wheeler, State College
Mrs. Katherine Wylie, Syracuse

Randall Brune, Syracuse
Edward Keen, State College
William Keen, State College
William McColly, State College
Peter O'Connor, State College
Lionel Sharpe, Cazenovia College
Hugo Theimer, State College
Robert Zapinski, State College

BIBLIOGRAPHY

Carroll, John. "Vectors of Prose Style," in Style in Language, ed. Thomas Sebeok, 1960, 283-92.

Harris, Chester. "Some Recent Developments in Factor Analysis," Ed. and Psych. Meas., 1964, No. 2, 193-206.

Osgood, C. G., Percy Tannenbaum and George Suci. The Measurement of Meaning, 1957.

Remondino, C. "A Factorial Analysis of the Evaluation of Scholastic Compositions in the Mother Tongue," Brit. Jour. Ed. Psych., Nov., 1959, 242-51.